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The Rh Factor, Vitamin K and Rubella Virus in Relation to Infant Mortality and Morbidity*

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WITHIN the last few years several discoveries have contributed to the better understanding of conditions affecting the fetus and newly-born infant. Among the most important of these have been: (1) the discovery of the Rh factor and its relation to erythroblastosis fetalis, (2) the discovery of vitamin K and its relation to hemorrhagic disease of the new-born, (3) the recognition of the harmful effect on the embryo of a rubella infection during the early months of pregnancy.

Until very recently, the etiologic agents responsible for erythroblastosis, hemorrhagic disease, and malformations have been unsuspected in spite of the fact that these conditions have long been recognized clinically. Now the first two groups and part of the last can be added to the pathologic states of the fetus for which causes are known.

ERYTHROBLASTOSIS FETALIS

Erythroblastosis fetalis has been recognized for many years as a disease characterized by excessive destruction and abnormal production of red blood cells.

It has recently been suggested that the name be changed to hemolytic disease of the new-born, inasmuch as hemolysis is the underlying disturbance responsible for the symptom complex. This name has several advantages, and its use may be advisable, since at times the term erythroblastosis has been applied to any disturbance, regardless of etiology, in which there is unusual erythropoietic activity. The principal drawback is the similarity to "hemolytic anemia" which is used to designate an anemia characterized by increased fragility of erythrocytes. The name erythroblastosis will be retained in this paper.

The excessive hemolysis and the resulting abnormal erythropoiesis are manifested in the living infant by anemia, jaundice, and the presence of immature red blood cells in the circulation. At necropsy they are shown by foci of erythropoiesis in abnormal loca-

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tions throughout the body, and by deposits of blood pigment in the liver, spleen, and kidneys.

Although all of these manifestations are ordinarily present in infants suffering from erythroblastosis, the various clinical varieties of the disease are dependent upon the relative severity of individual symptoms. The most severe form is commonly known as the hydropic type, since marked generalized anasarca and pleural and peritoneal effusions are the outstanding feature. The anemia is usually more profound than in any other form; erythroblastemia and abnormal erythropoiesis are more excessive. Hydropic infants are frequently stillborn, and if born alive rarely survive more than a few hours.

The icteric form, commonly known as icterus gravis, shows much variation in severity. These infants frequently have an intense and startling jaundice. Although rarely present except in a very mild degree at the time of birth, it subsequently becomes rapidly progressive and assumes a most characteristic hue at 36 to 48 hours. Erythroblastemia is usually present at birth and anemia is ordinarily demonstrable then, or within a short time. The general prognosis is dependent upon the rapidity with which anemia and jaundice appear and the extent to which they progress. The present outlook for some of these infants is hopeless, regardless of treatment; some will survive if given correctly timed transfusions of proper blood in adequate amounts, and some will survive without treatment.

The type in which the anemia is the most prominent symptom and in which jaundice and erythroblastemia are mild or absent has been frequently known as idiopathic anemia of the new-born. These infants make up relatively few of those who have heretofore been included under the diagnosis of erythroblastosis and it is probable that this form of the disease commonly escapes recognition. It is the most benign form, and although an occasional infant may require a transfusion, the majority will respond to iron and liver therapy and few will die even without treatment.

Until 1941 when Levine and his coworkers [1] recognized the importance of the Rh factor in relation to erythroblastosis, nothing was known of the cause of this condition and there was difference of opinion as to whether the abnormal regeneration or the degeneration of blood cells was the primary disturbance. It has now been definitely established that the disease is a hemolytic anemia generally due to maternal immunization to the Rh factor.

In 1940 Landsteiner and Wiener [2] reported that rabbits injected with the blood of rhesus monkeys developed agglutinins which reacted not only with rhesus blood but with the bloods of approximately 85 per cent of human beings as well. The human cells which were clumped by the rabbit serum were considered Rh positive (Rh+) and those not clumped, Rh negative (Rh—). The antibodies causing the clumping were known as anti-Rh agglutinins.

Levine and Stetson (1939) [3] had previously reported an unusual agglutinin in the blood of a woman giving birth to an infant with erythroblastosis, and in subsequent investigations the similarity of the anti-Rh agglutinin produced in rabbits to an agglutinin frequently found in the blood of women bearing infants with erythroblastosis was established. Wiener and Levine, each with his coworkers, and numerous other investigators have, since that time, corroborated the original observations and added much additional information.

All individuals are born Rh+ or Rh— and remain the same throughout life. The Rh character is inherited in a simple Mendelian manner, with the positive gene dominant over the nega-

tive. It is consequently possible for two Rh+ individuals to have an Rh— child, but impossible for two Rh— individuals to have an Rh+ child. This fact is of importance in determining possible parentage.

Anti-Rh agglutinins are never normally present, but can be produced in some Rh— individuals by the introduction of Rh+ cells into the circulation. If an Rh— person of either sex is transfused with Rh+ blood, and especially if several transfusions are given, agglutinin formation may be stimulated. In an Rh— woman, pregnant with an Rh+ fetus (Rh+ gene inherited from an Rh+ father) agglutinins may be produced by the passage of the Rh+ fetal cells through the placental villi into the maternal circulation. Agglutinins which are present in the maternal blood either as a result of transfusions or pregnancy may pass through the placenta and cause agglutination and hemolysis of the red blood cells of the fetus. The changes characteristic of eryblastosis result.

When agglutinins have once been produced they persist or are reformed during each pregnancy so that all subsequently conceived Rh+ fetuses will suffer from erythroblastosis. Agglutinins may be present in the blood of the mother and may affect the fetus even though they cannot be demonstrated by laboratory tests. Several investigators have recently reported that the blood of some immunized women contains an inhibiting substance which interferes with the *in vitro* action of the agglutinins. It is possible that the presence of the inhibitor substance is a sign of extreme immunization and may explain why the women whose fetuses are most severely affected are often those in whom anti-Rh agglutinins have previously been undemonstrable.

Many important facts have been established in the last five years concerning the relation of the Rh factor to erythroblastosis. In approximately 10 per cent of all pregnancies, an Rh— woman bears an Rh+ child. Erythroblastosis occurs in about 0.3 to 0.4 per cent of new-born infants, or once in every 30 to 40 pregnancies where the wife is Rh— and the husband is Rh+.

Over 90 per cent of all women with infants suffering from erythroblastosis are Rh—. The seeming occurrence of the disease in the 10 per cent who are Rh+ may be explained by:

1. Sensitization to—
   a. one of the Rh subgroups
   b. Hr, a rare antigenic substance genetically related to Rh
   c. A or B antigens (still not conclusively proved)
2. Error in diagnosis of the disease
3. Error in performing the Rh tests
4. Some as yet unknown cause

Erythroblastosis seldom occurs in a first pregnancy except when an Rh— woman has had one or more previous transfusions of Rh+ blood. In those rare cases where it does occur in the absence of a previous transfusion or pregnancy the disease is usually mild. After it once occurs all subsequently conceived Rh+ fetuses will be affected, all Rh— fetuses will escape. The disease frequently, but not invariably, becomes more severe with succeeding pregnancies; when a woman has once lost a child from erythroblastosis the majority of subsequently born Rh+ children also fail to survive; a child who does survive may show evidence of brain damage. The number of Rh— children conceived in subsequent pregnancies by women who have given birth to one infant with erythroblastosis is much lower than would be expected if 55 per cent of the husbands were heterozygous for the Rh factor *; it has

* The estimated genotypic ratio in a population mating at random is 37.54 per cent RhRh; 47.46 per cent Rhrh; 15.00 per cent rhrh. Among those who are phenotypically Rh+ the ratio is 44.7 per cent RhRh; 55.3 per cent Rhrh. In a random population of Rh— (rhrh) women married to Rh+ men (Rhrh or RhRh) 27.65 per cent of the offspring should be Rh— (rhrh).

been suggested, therefore, that the homogygous Rh+ state of the father is associated in some unknown way with the initial production of the disease.

There is no known method of preventing erythroblastosis. The only treatment of value is symptomatic and consists principally in giving transfusions of Rh— blood to tide the infant over the period when it is destroying its own Rh+ cells. The recent suggestions that Rh+ cells are preferable to Rh— are not supported by adequate clinical observations, and the best evidence at the present time indicates that Rh— blood gives more favorable results. Only when Rh— blood is unobtainable should resort be had to Rh+ blood. Intraperitoneal or intramuscular administration of blood is without value. Iron and liver are of value in promoting the production of new erythrocytes, and general supportive treatment should be used as indicated.

When it becomes necessary to transfuse any Rh— individual, Rh— blood should always be used if possible. It is imperative that Rh— women who have given birth to infants with erythroblastosis receive Rh— blood, but since immunization may occur in either sex from multiple transfusions, it would be safest never to transfuse any Rh— individual with Rh+ blood. An additional problem presents itself in relation to transfusion of the female. It is possible for transfusions given in childhood or young womanhood to produce immunization and prevent an Rh— woman from ever bearing normal children by an Rh+ man. Unless generalized Rh testing becomes possible the increasing use of transfusions, as a result of the greater availability of blood in blood banks, is certain to result in an increasing incidence of erythroblastosis.

The Rh antigen was originally thought to be a specific uniform substance whose presence could be detected by the use of a single anti-Rh agglutinin either human or animal in origin. It has since been shown to consist of several component parts. At least 8 variations in the antigenic nature of the Rh substance have been described, all believed to be allelic in character. They can be demonstrated by the use of three different anti-Rh agglutinins.

The agglutinins produced in rabbits and the type most commonly found in human beings clump the red blood cells of about 85 per cent of the white population of the United States, England, and Australia. Agglutinins have been observed, however, which show some variability in the percentages of bloods whose cells they agglutinate; outstanding among these are two types of sera which react with only 30 per cent and 70 per cent of bloods respectively. For the most part, cells which are agglutinated by the 30 per cent serum are also agglutinated by that giving a 70 per cent reaction, and the cells reacting with the 70 per cent serum usually react with the 85 per cent serum, while those which fail to react with the 85 per cent serum are also usually negative with the other two. If this were uniformly true all bloods could be divided into 3 Rh groups; unfortunately there are occasional variations, so that at least 8 groups must be recognized.

The occasional variables are of much less practical importance than they are of theoretic interest. For practical purposes an individual can be classified as Rh+ or Rh— according to the reaction of his or her cells to the standard anti-Rh serum. It is only important to remember that of two individuals who react positively to the 85 per cent serum, one may react positively to one or both of the other two sera, while the other may react negatively to one or both. In the case of the latter individual it might be possible for sensitization to occur from the introduction into

his circulation of blood which is positive to one of the sera to which his own blood reacts negatively; i.e., in spite of the fact that he is Rh+ to one serum an individual may still develop Rh antibodies against a portion of the Rh complex which he lacks, and consequently can be positive for one Rh antigen and at the same time possess antibodies against another Rh antigen.

The question has been raised concerning the desirability of discouraging marriage between Rh— women and Rh+ men. In one state legislature there has already been a bill proposed to make such marriages illegal, and at least one judge has found the inability of a couple to have children because of Rh incompatibility sufficient ground for divorce.

It is extremely difficult to arrive at an accurate figure for the incidence of erythroblastosis. During the last five and one-half years, 19,000 infants have been born at the Chicago Lying-in Hospital. Thirty of the deaths and 20 of the stillbirths were believed due to this condition, making the incidence of fatal cases approximately 1 in 380 births.

It has been suggested that the incidence is somewhat high because of the nature of the cases treated at this hospital, but in spite of this our incidence is lower than that reported from some other institutions and it seems a conservative figure.

In the United States in 1943 there were 2,934,860 births and about 78,485 stillbirths, making the total number of reported births slightly over 3,000,000. If the mortality from erythroblastosis was the same throughout the country as at the Chicago Lying-in Hospital, approximately 8,000 babies in the United States died during 1943 from this disease. In addition to those who died there were probably many of those who survived who were permanently handicapped by brain damage incident to the disease.

At least 90 per cent of the cases of erythroblastosis could be prevented if there were no matings between Rh— women and Rh+ men. The question to be decided is whether this potential salvage would compensate for the time, money, and personal sacrifice involved in universal Rh testing and prohibition of marriage between persons of incompatible blood groups.

It is extremely important that the cause of death be ascertained in every infant who is stillborn or who fails to survive. If erythroblastosis exists further attempts at childbearing on the part of that mother cause a needless physical, emotional, and economic loss. To condemn a woman to a barren existence, however, because of an erroneous diagnosis of erythroblastosis is as grievous a fault as allowing her to continue to bear dead infants. At the present time erythroblastosis frequently goes undiagnosed even in the presence of typical symptoms, and, on the other hand, is commonly indicted as a cause of death on inadequate grounds. Improved diagnostic acumen is needed both by clinicians and pathologists.

HEMORRHAGIC DISEASE

Hemorrhagic disease is a condition about which there has been much debate since it was first described by Townsend [4] in 1894. He defined it as spontaneous external or internal bleeding occurring in new-born infants, unrelated to trauma, accident, or definite disease. Since that time this same definition has been widely used but has been variously interpreted by different investigators. Many have included infants with intracranial hemorrhage, and some have included many infants with severe asphyxia at birth. Others have excluded both of these groups, contending that intracranial hemorrhage is usually traumatic

and that the presence of asphyxia is directly contributory to hemorrhage. Such investigators have usually included as having hemorrhagic disease only infants with bleeding under the skin, into the gastrointestinal tract or other abdominal or thoracic viscera. The contention on the part of those who have included a wider variety of hemorrhage has been that although trauma or asphyxia might be responsible for a certain amount of bleeding, a coexisting hemorrhagic tendency might increase mild bleeding into a fatal hemorrhage.

Rodda [5] in 1920 reported that infants with hemorrhagic disease exhibited a prolonged bleeding and clotting time and believed this could be shortened by the intramuscular administration of whole blood. He recommended the routine testing of bleeding and clotting time in order that infants manifesting these conditions might be treated and bleeding prevented.

Dam's discovery of vitamin K and the establishment of its relation to blood coagulation gave new impetus to the study of hemorrhagic disease. With the introduction of adequate methods for determination of prothrombin time, several investigators reported that infants with hemorrhagic disease had a marked prolongation of prothrombin time and that the administration of vitamin K caused a decrease in prothrombin time and a cessation of hemorrhage. It also soon became evident that although the prothrombin time is normal in almost all infants at birth it often becomes gradually prolonged and reaches a maximum on the second or third day of life. The prothrombin time subsequently becomes shortened and is ordinarily again normal by the end of the first week. It was also learned that by administering vitamin K to the mother during labor or to the infant immediately after birth, this prolongation of prothrombin time could generally be prevented.

As a consequence, the recommendation was made that vitamin K be given to all pregnant women during labor, or for days or weeks prior to delivery, and to all infants immediately after birth. Many investigators were extremely enthusiastic in their prophecies regarding the saving of life that would follow its generalized use. It was suggested that hemorrhage as a cause of death would become almost a thing of the past.

One of the first dissenting voices was that of Sanford,[6] who, with his coworkers, reported no decrease in hemorrhagic manifestations among 800 infants who received vitamin K immediately after birth. Parks and Sweet [7] gave vitamin K to 2,000 women during labor with no reduction in stillbirth and neonatal mortality rates. At the Chicago Lying-in Hospital [8] over a 2 year period, 6,000 women were given vitamin K. The fetal and infant mortality during those years was compared with that during the subsequent two years when the vitamin was not given and no difference was found. Lehman [9] has recently reported that, of 13,000 infants who received vitamin K after birth, the mortality from hemorrhage among those born alive at term was reduced 1.6 per 1,000 in comparison to a group of 17,000 who did not receive the vitamin.

Most of the series of cases in which mortality rates appeared to have been appreciably decreased by the use of vitamin K were relatively small and at the present time most of the evidence seems to indicate that little saving of life in the new-born period can be expected from the routine administration of vitamin K to mother or infant.

It appears, however, to have value in the treatment of gastrointestinal hemorrhage, and should be given any infant with such bleeding without delay. Moreover, it should be administered to any infant with demonstrable or suspected bleeding on the possibility

that the prothrombin time may be prolonged.

It may be concluded that occasional infants show spontaneous hemorrhages which are associated with a prolonged prothrombin time and that such hemorrhages will cease when the administration of vitamin K has brought the prothrombin time to a normal level. Hemorrhages due to any other cause are unaffected by vitamin K. The routine administration as a prophylactic procedure does not seem warranted.

RUBELLA AND CONGENITAL MALFORMATIONS

The fact that viruses are easily propagated in embryonic tissue has been known for many years, but not until Gregg [10] in 1942 found an association between rubella in early pregnancy and congenital defects of the eyes and heart, was it recognized that virus diseases might be the cause of certain human malformations.

Gregg reported 78 infants with congenital cataracts, all but 10 of whose mothers gave history of rubella during early pregnancy. The majority of these infants were small, poorly nourished, and were difficult to feed. In all but 16 the cataracts were bilateral and in at least 44 there was some evidence of a cardiac malformation. All were born in Australia and most of the mothers had been exposed to rubella during a single epidemic.

The apparent relationship between rubella in early pregnancy and the presence of congenital cataracts in the new-born aroused immediate interest in the problem in Australia and, under the auspices of the National Health and Research Council, Swan and his coworkers [11] began a widespread investigation. They were able to locate 57 infants whose mothers gave a history of some exanthematous disease during pregnancy. Of 25 women who had had rubella in the first 2 months of pregnancy, all offspring suffered some type of malformation; malformations were also present in 4 infants of 8 women who had had the disease in the third month, and in only 2 of 12 who had had it later. In the total group there were 14 infants with eye defects (all but one of which were cataracts), and of these, 9 also had heart lesions, 3 were mentally defective, and 1 had a club-foot. In all there were 17 infants with heart defects, 6 of whom were otherwise normal. There were 4 infants with cataracts in whom there was no history of maternal infection.

In a subsequent paper, Swan and his coworkers [12] reported 13 additional women affected with rubella in the early months of pregnancy, 11 of whose offspring had congenital defects. These consisted largely of cataracts, microcephaly, and deaf mutism. In 1944 Reese,[13] Rones,[14] and Erickson [15] each reported a few cases in the United States similar to those observed in Australia. Reese recorded 3 cases of congenital cataracts, all associated with cardiac disturbances, in infants whose mothers had had rubella in early pregnancy. Rones reported 2 infants with congenital cataracts whose mothers had had the infection during the second month of pregnancy, 2 with glaucoma where the infection had occurred during the third month. Erickson observed 10 infants with cataracts and 1 with microphthalmia. Ten mothers had had rubella in the first 2 months of pregnancy, 1 at 2½ months. Nine appeared to have congenital cardiac defects.

At a meeting of the New South Wales Branch of the British Medical Association in December, 1944, another manifestation of maternal rubella was discussed. Carruthers [16] stated that, with the help of the health department, 147 infants with congenital malformations had been found, and that of these 116 were deaf. Among the 102 born to women with definite histories of rubella

in early pregnancy, 74 were deaf-mutes and 14 gave evidence of congenital heart disease. He described in detail 17 infants with deaf-mutism who were under his own care. None had heart lesions or cataracts. Eleven were physically stunted and 3 were microcephalic.

Gregg [17] at the same meeting also reported having examined several infants who were deaf-mutes but who lacked evidence of ocular defects, and stated that he had previously reported 8 infants who had been observed after the publication of his original paper. All had eye disturbances and additional abnormalities had consisted of heart disease in 6, and deafness in 3.

In discussing the papers by Carruthers and Gregg, Vickery [18] presented data on 21 infants with variable degrees of deafness. Twenty mothers had had rubella (and the other was presumed to have had it) during the first 3 months of pregnancy. Thirteen gave evidence of congenital heart disease; all were nervously unstable, but none had eye defects.

Dr. E. S. A. Meyers at the same meeting commented on the fact that over 200 children had been made defective by a single epidemic of rubella (78 cases reported by Gregg and 145 more collected by the Health Department of New South Wales).

It appears that three principal defects are to be found in children whose mothers have had rubella during early pregnancy. These consist of cataracts involving the central part of the lens, ear defects producing deaf-mutism because of the almost complete loss of hearing occasioned by a sacculo-ocular type of degeneration, and cardiac disturbances due to interventricular defect, or patency of the ductus arteriosus.

Almost all women with rubella in the first two months of pregnancy give birth to defective children; when the disease occurs later the infant is less prone to be affected, but eye defects have followed its occurrence in the third month, and ear defects its occurrence in the fourth month.

Almost all of the cases reported from Australia have been associated with epidemics of rubella. The relatively few cases reported from any other country may indicate either that within recent years the disease has not occurred in epidemic form among young adults or that the perspicacity of the Australian investigators has led them to make an association between maternal rubella and congenital defects in the offspring which other observers have overlooked.

If a single epidemic in Australia produced more than 200 defective children, the prevention or control of similar epidemics in other parts of the world becomes a challenge to all individuals interested in public health.

CONCLUSION

The discovery of vitamin K, the recognition of the Rh factor, and the establishment of the relation of the rubella virus to malformations, constitute important advances in knowledge concerning conditions affecting the fetus during the intrauterine period and the early days of life. All of these discoveries are excellent examples of the spectacular results which may follow the correlation of fundamental observations with clinical problems. They point the way for further advances and illustrate the necessity for the close integration of all fields of scientific investigation.

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Tuberculosis Case Finding with Mobile Photo-Roentgenographic Unit in Sumner County, Tennessee*

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SINCE 1929 tuberculosis case finding clinics have been held regularly by the Sumner County Health Department. From 1929 to July, 1939, this service was furnished through the Division of Tuberculosis Control of the Tennessee Department of Public Health and consisted of clinics held once or twice a month in Gallatin for the examination of known cases, contacts to such cases, and individuals referred by private physicians because of symptoms. Any resident of Sumner County was eligible for examination upon referral by his family physician. With the assistance of the Commonwealth Fund, a special Tuberculosis Control Program was inaugurated in July, 1939, which was aimed particularly at the treatment of tuberculosis in the absence of adequate hospital facilities. Sufficient personnel and equipment were supplied to carry on an intensified case finding program with the treatment program. In this program four x-ray clinics a month were held in Gallatin, the county seat, and one each in Portland and Westmoreland, the two other largest community centers in the county.

The number of cases of reinfection tuberculosis in need of collapse therapy and other treatment was sufficient to warrant the expenditure of funds under the control program. It was felt, however, that the proportion of early cases of tuberculosis discovered through the Health Department clinic was lower than it should be, and that another case finding method should be tried. Through a gift of the Commonwealth Fund, the Division of Tuberculosis Control of the Tennessee Department of Public Health purchased a mobile photo-roentgenographic unit for use in Tennessee; and Sumner County is one of the first counties making use of this unit in the extension of the case finding program. The Sumner County Medical Society has given blanket permission for x-ray examinations on the mobile unit. Since both case finding services have run and will continue to run concurrently, it is of interest to compare the numbers of people reached by each method and the comparative results in actual cases found.

There is considerable difference in the cost of the two services. The 14″ x 17″ flat film used in the Health Department clinic is more expensive than the 4″ x 5″ stereoscopic film used on the mobile unit. The usual clinic load in the Health Department clinics is approximately 30 per clinic day, while on the mobile unit 250 to 350 persons can be examined in a clinic day. The lower unit film cost and accessibility to larger groups of people during a clinic session makes the mobile unit case finding serv-

* This investigation was made possible by the financial support of the Commonwealth Fund.

ice less expensive than the Health Department clinics.

The small film is used as a screening process for the designation of definite or suspicious pathology. Cases with suspicious or definite tuberculous lesions are reëxamined in special clinics using 14″ x 17″ film. The final interpretation is made by two clinicians using both films and other diagnostic aids.

The mobile unit was scheduled for five visits to Sumner County between October 1, 1944, and May 31, 1945. These visits varied in length from 2 to 5 weeks. During subsequent months the mobile unit will be scheduled for visits to community centers in the county until the entire population has been given an opportunity to have an x-ray examination.

The purpose of this evaluation is the presentation of the comparative effectiveness of the mobile unit and the Health Department clinic as case finding services. The material has been divided into three sections: (A) Persons Examined on Mobile Unit and in Health Department Clinic, October 1, 1944, through May 31, 1945; (B) Results of Case Finding in School, Industry, and Community Groups; and (C) Extent and Activity of Cases of Reinfection Tuberculosis.

A. PERSONS EXAMINED ON MOBILE UNIT AND IN HEALTH DEPARTMENT CLINIC, OCTOBER 1, 1944, THROUGH MAY 31, 1945

Through Health Department activities in the past five years the citizens of Sumner County have become aware of the tuberculosis problem. In general, the people are very receptive of this new x-ray program. The first work in the initiation of this program was in organized groups. In the two shoe factories the personnel departments were contacted and were responsible for the organization of the procedures for examination of their employees. In the other industries the program was explained to plant managers and an opportunity was provided for a discussion with the employees of the importance of x-ray examinations. In all industries the response was excellent. The high schools were handled in the same manner as the industries, with the program presented to the students. For the general community survey of Gallatin, which followed the work in industries and high schools, the program was explained to many groups. These included civic and home demonstration clubs, Parent-Teacher Association, the churches, the County Court, and the City Council. Articles in newspapers, reels in movie houses, and hand bills distributed by Scouts and airplanes were used in the pre-survey publicity. Since the number of clubs was limited in Hendersonville, the second community visited, hand bills were mailed to all rural box holders in this area. The results of examinations in these two community centers only are included in this preliminary report.

During this 8 month period 5,656 x-ray examinations have been made on the mobile unit and in the Health Department clinic. Included in the total were 138 individuals who were not residents of Sumner County. The mobile unit reached 4,825 persons through the survey of five industrial plants, three high schools, the city of Gallatin, and the area of Hendersonville. The Health Department clinic furnished examinations for 831 other persons from all over Sumner County through its established x-ray clinics.

The survey includes examination of persons 12 years of age and over. According to the 1940 census, the population of Sumner County in this age group was 25,043. Thus far 5,518, or 22.0 per cent of the population of the county (excluding non-residents), have been x-rayed: 4,715, or 18.8 per cent, have been examined on the mobile unit

TABLE 1

Number and Percentage Examined on Mobile Unit in School, Industry, and Community Groups and in Health Department Clinic, by Age Group

Age Group in Years	Population	Grand Total		Mobile Unit								Health Dept. Clinic	
				Total		School		Industry		Community			
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total	25,043	5,656	22.6	4,825	19.3	732	2.9	1,352	5.4	2,741	10.9	831	3.3
12–14	2,010	585	29.1	553	27.5	171	8.5	0	...	382	19.0	32	1.6
15–19	3,459	1,135	32.8	1,002	29.0	498	14.4	232	6.7	272	7.9	133	3.8
20–24	2,970	592	19.9	471	15.9	10	0.3	249	8.4	212	7.1	121	4.1
25–29	2,584	644	24.9	527	20.4	3	0.1	256	9.9	268	10.4	117	4.5
30–34	2,214	599	27.1	513	23.2	7	0.3	239	10.8	267	12.1	86	3.9
35–44	3,688	893	24.2	758	20.6	19	0.5	247	6.7	492	13.3	135	3.7
45–54	3,322	651	19.6	544	16.4	18	0.5	94	2.8	432	13.0	107	3.2
55–64	2,367	351	14.8	292	12.3	5	0.2	32	1.4	255	10.8	59	2.5
65 and over	2,429	206	8.5	165	6.8	1	*	3	0.1	161	6.6	41	1.7

* Less than 0.05 per cent

and 803, or 3.2 per cent, in the Health Department clinic. Since one entire visit of 5 weeks' duration was devoted to the city of Gallatin, it was hoped that a high percentage of its citizens would be x-rayed. A total of 2,291, or 62.0 per cent of the city residents, did take advantage of this opportunity. The mobile unit attracted 2,111, or 57.1 per cent, of the residents of the city, while the Health Department clinic served 180, or 4.9 per cent. The white females

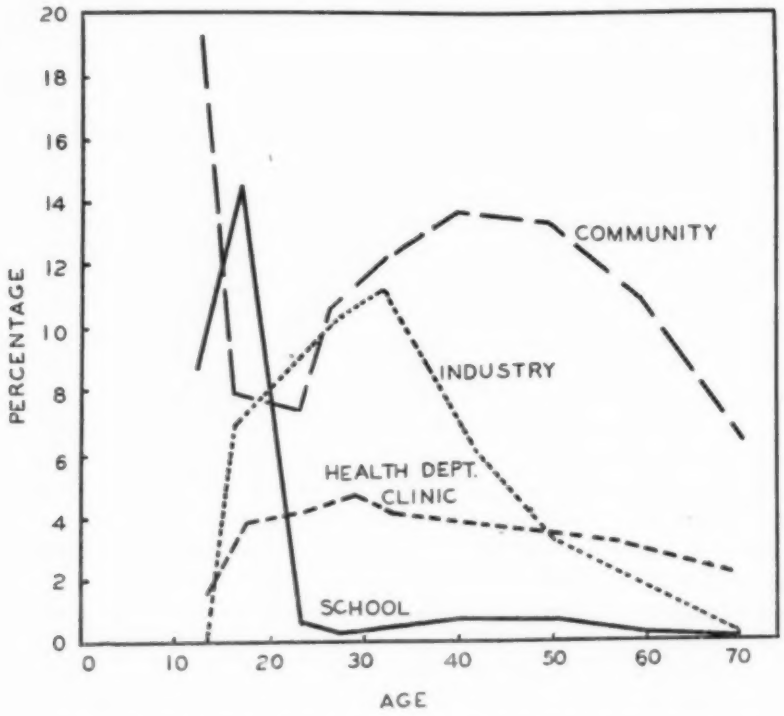

CHART A—Percentage of Population Examined in School, Industry, and Community Groups on Mobile Unit, and in Health Department Clinic, by Age

were the largest group with 1,090, or 79.2 per cent, x-rayed. The white males had the second largest number and percentage examined with 734, or 60.8 per cent. The colored females had 267, or 47.1 per cent, examined, and the colored males 200, or 36.6 per cent. The percentages for the white and colored male groups would be considerably higher if account were taken that approximately 10 per cent of the males were in the armed services. The response of the colored population was disappointing, particularly in view of the fact that the mobile unit was moved to the two colored sections of Gallatin especially to attract this portion of the city's residents.

The number and percentage by age group of the 5,656 individuals reached in this case finding program through surveys of school, industry, and community groups on the mobile unit and in the Health Department clinic, are given in Table 1. Seven hundred and thirty-two of those examined on the mobile unit were high school students and teachers, 1,352 employees in industries, and 2,741 persons in the general population. Chart A shows by age groups the percentages of population examined in the first part of this program through school, industry, and community surveys by the mobile unit and in the Health Department clinic. From Table 1 and Chart A the differences in the age distribution of the populations of the four groups are apparent. The community survey resulted in the examination of a relatively large proportion of adults 25 years of age and over. The industrial survey reached young adults. The high school group consisted of persons under 20 years of age with the exception of a few teachers. The Health Department clinic, however, served persons of all age groups. The age composition of these groups needs to be considered in the evaluation of this case finding program.

B. RESULTS OF CASE FINDING IN SCHOOL, INDUSTRY, AND COMMUNITY GROUPS

The Health Department clinic serves two different purposes: The examination of persons as a case finding procedure, and the reëxamination of persons known to have and suspected of having reinfection tuberculosis. In order to compare the results of these case finding procedures, it was necessary to use only the first examinations in the Health Department clinic. There were 500 people 12 years of age and over who were examined for the first time in the Health Department clinic during these 8 months, and the results of their examinations will be used for comparison with the results from the mobile unit.

Of 5,325 x-rays made on the mobile unit and in the Health Department clinic, 190, or 3.6 per cent, showed evidence of clinical pulmonary tubercu-

TABLE 2

Number and Percentage of Cases of Reinfection Tuberculosis Found in School, Industry, and Community Groups on Mobile Unit and in Health Department Clinic

	Total Examined	*Cases*	
		Number	*Per cent*
Total	5,325	190	3.6
Mobile Unit, Total	4,825	146	3.0
High School	732	5	0.7
Industry	1,352	38	2.8
Community	2,741	103	3.8
Health Department Clinic	500	44	8.8

losis. Thus far in this program no significant difference was noted in the prevalence of tuberculosis in the white and colored groups examined. In the population x-rayed, 5, or 0.7 per cent, of the persons examined in the high school group, were found to have tuberculosis, 38, or 2.8 per cent, of the industrial employees, and 103, or 3.8 per cent, of the persons in the community group examined on the mobile unit were found to have tuberculosis. The Health Department clinic found 44 cases, or 8.8 per cent, in the persons examined for the first time. Table 2 and Chart B show clearly that the Health Department clinic is still the most efficient case finding method. The community survey was second most efficient in discovering tuberculosis, with the industrial survey following as third, and the high school survey as the least efficient.

In Table 3 appear the number and percentage of persons examined and found to have reinfection tuberculosis in the school, industry, and community groups on the mobile unit, and in the Health Department clinic by age group. The Health Department clinic has the highest percentage of cases for each age group with the exception of the small group under 15 years of age. In examination of the general community population on the mobile unit and in the Health Department clinic the highest percentages of cases were found in the age group 55 years and over, with 11.3 per cent in the community group and 35.1 per cent in the Health Department clinic, found to have reinfection tuberculosis. It is evident that the examination of persons 55 years of age and older is productive in the discovery of tuberculosis in this area.

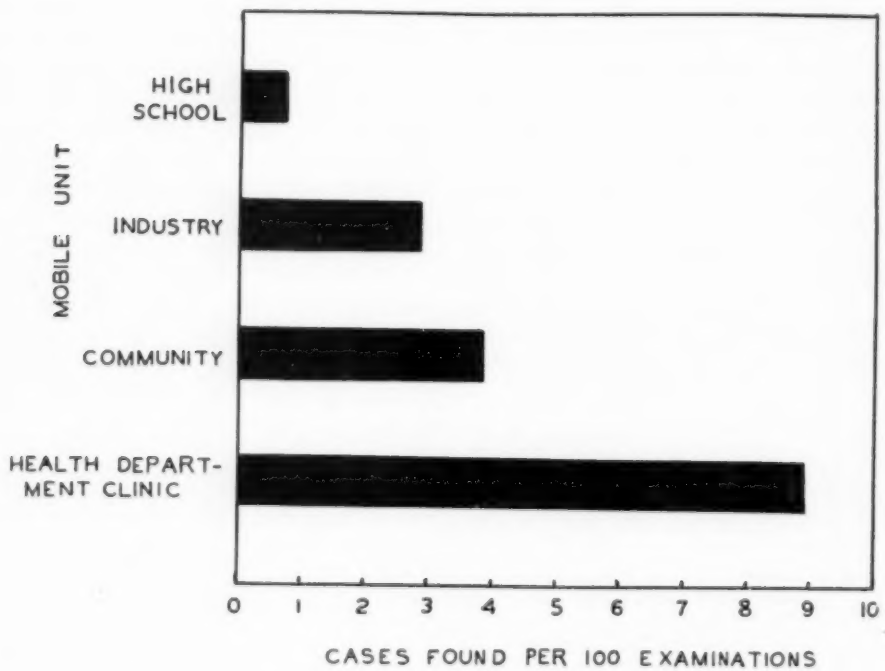

CHART B—Percentage of Population with Reinfection Tuberculosis Found on Examination of School, Industry, and Community Groups on Mobile Unit, and in Health Department Clinic

TABLE 3

Number and Percentage of Cases of Reinfection Tuberculosis Found in School, Industry, and Community Groups on Mobile Unit, and in Health Department Clinic, by Age Group

Age Group in Years	Total			Mobile Unit									Health Dept. Clinic		
				School			Industry			Community					
		Cases			Cases			Cases			Cases			Cases	
	Exam.	No.	%	Exam.	No.	%	Exam.	No.	%	Exam.	No.	%	Exam.	No.	%
Total	5,325	190	3.6	732	5	0.7	1,352	38	2.8	2,741	103	3.8	500	44	8.8
12–14	572	2	0.3	171	2	1.2	0	0	...	382	0	...	19	0	...
15–19	1,108	8	0.7	498	2	0.4	232	1	0.4	272	1	0.4	106	4	3.8
20–24	541	11	2.0	10	0	...	249	5	2.0	212	4	1.9	70	2	2.9
25–29	592	18	3.0	3	0	...	256	6	2.3	268	7	2.6	65	5	7.7
30–34	557	14	2.5	7	0	...	239	6	2.5	267	6	2.2	44	2	4.5
35–44	828	38	4.6	19	1	5.3	247	13	5.3	492	19	3.9	70	5	7.1
45–54	613	30	4.9	18	0	...	94	5	5.3	432	19	4.4	69	6	8.7
55–64	326	40	12.3	5	0	...	32	2	6.2	255	25	9.8	34	13	38.2
65 and over	188	29	15.4	1	0	...	3	0	...	161	22	13.7	23	7	30.4

The percentage of examined population with reinfection tuberculosis by age group is shown in Chart C for the mobile unit and the Health Department clinic. In the group examined on the mobile unit, the percentage of cases increased with age, which was due principally to the accumulation of inactive cases. The percentage of active cases from these examinations on the mobile unit did not vary greatly by age group. The number of examinations made by the Health Department clinic in this period has been small, which might account for some of the variations. The percentages increased generally with age, the highest occurrence being in the age group 55–64 years. The percentage of active cases found in the Health Department clinic also is highest in this age group, being higher than the percentage with active tuberculosis found on the mobile unit in the same age group. More active cases of reinfection tuberculosis would be expected among persons who are examined because of contact to

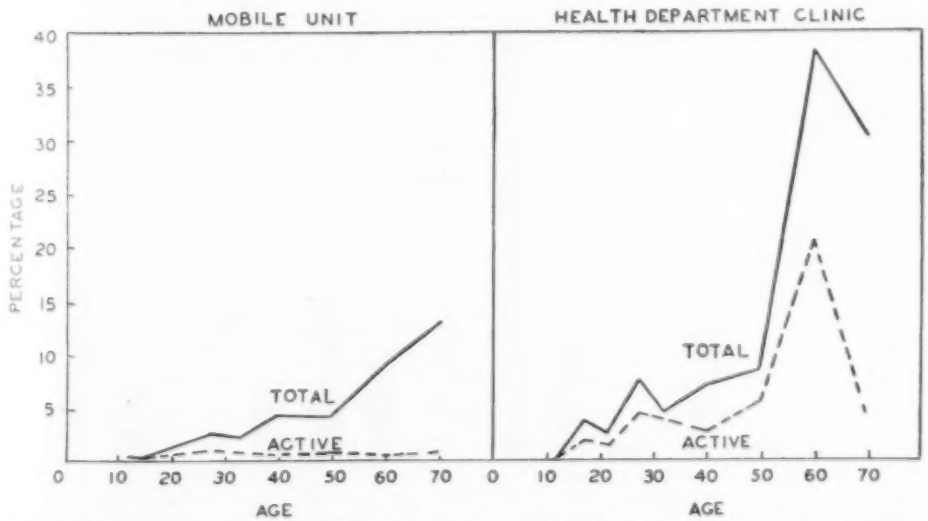

CHART C—Percentage of Examined Population with Reinfection Tuberculosis and with Active Reinfection Tuberculosis Found on Mobile Unit and in Health Department Clinic, by Age

known cases and/or because of clinical symptoms than among other groups without such characteristics.

C. EXTENT AND ACTIVITY OF CASES OF REINFECTION TUBERCULOSIS

Through the case finding methods employed—the mobile unit and Health Department clinic—190 cases of reinfection tuberculosis were found. The extent and activity of the 146 cases from the mobile unit and 44 from the Health Department clinic are given in Table 4.

Included in the 146 cases from the mobile unit were 55 previously known cases and 91 cases not previously known to the Health Department. Thus nearly two-thirds of these cases were not known to the Health Department. There were in all 28 active cases, and of these 20 were new. Of these 20 active cases, minimal cases numbered 16, moderately advanced 3, and far advanced 1. Seventy-one of the 118 inactive cases were new, of which 55 were minimal, 15 moderately advanced, and 1 far advanced.

TABLE 4

Extent and Activity of 190 Cases of Reinfection Tuberculosis Found on Mobile Unit and in Health Department Clinic

	Total			*Mobile Unit*			*Health Dept. Clinic*	
		New Cases			*New Cases*		*New Cases*	
Extent and Activity	*Cases Found*	*Number*	*Per cent*	*Cases Found*	*Number*	*Per cent*	*Number*	*Per cent*
Total	190	135	99.9	146	91	100.0	44	100.0
Far advanced active	10	8	5.9	3	1	1.1	7	15.9
Moderately advanced active	18	13	9.6	8	3	3.3	10	22.7
Minimal active	22	21	15.6	17	16	17.6	5	11.4
Far advanced inactive	1	1	0.7	1	1	1.1	0	....
Moderately advanced inactive	32	20	14.8	27	15	16.5	5	11.4
Minimal inactive	107	72	53.3	90	55	60.4	17	38.6

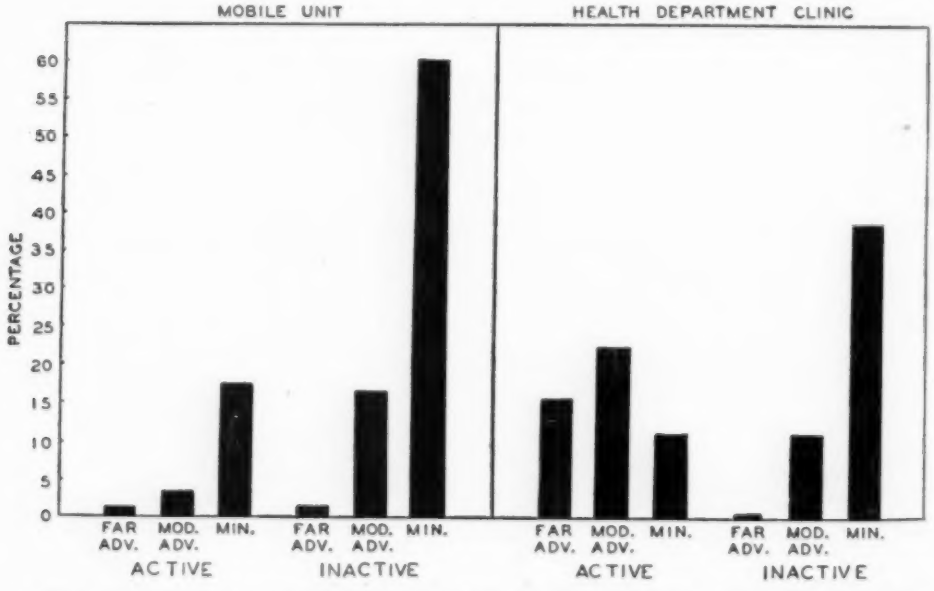

CHART D—Percentage Distribution of New Cases Found on Mobile Unit and in Health Department Clinic, by Extent and Activity

Percentage distributions of the new cases found on the mobile unit and in the Health Department clinic are shown in Chart D and Table 4 according to extent and activity. Of the 91 new cases found on the mobile unit, 20, or 22 per cent, were active, while of the new cases found in the Health Department clinic, 22, or 50 per cent, were active.

Of the new active cases in the Health Department clinic, 77 per cent were far advanced and moderately advanced, while of those found on the mobile unit only 20 per cent were far advanced and moderately advanced. It is noteworthy that minimal cases are discovered, and discovered relatively frequently, through the examination of apparently well people in these surveys of the general population. During this period of time, 16 new minimal active cases were discovered through the mobile unit and only 5 in the Health Department clinic.

One of the main objectives of the tuberculosis control program since its inception has been the adequate treatment of known cases of reinfection tuberculosis. The visits of the mobile unit to Sumner County have been scheduled so that sufficient time was allowed for institution of treatment and follow-up procedures by the Sumner County Health Department. Hospitalization and treatment of new active cases have been instituted promptly. It is felt that the success of the case finding program by use of the mobile unit is due to the fact that both case finding and treatment services are being carried on concurrently.

DISCUSSION

In the course of the work in the Health Department clinic in Sumner County, a relatively high proportion of the new cases of tuberculosis discovered through referral of persons with symptoms and of contacts had tuberculosis in the advanced stages. Therefore, it seemed desirable to extend case finding activities to the so-called healthy population of the county to find persons with minimal tuberculosis before symptoms had developed. In order to reach the general population, a mobile photo-roentgenographic unit using 4″ x 5″ film, a gift of the Commonwealth Fund, was made available by the Tennessee Department of Public Health.

The initial work in this program with the mobile unit was with organized groups—the large industries and high schools. This service is being extended gradually to all sections of the county in order that satisfactory control and treatment procedures can be instituted promptly. In this paper the results of the program in industries and high schools and in the two communities are reported.

The comparison of the results of this program using the mobile unit with those from the routine chest clinic indicates the value of carrying on both types of services. Although the Health Department clinic is effective in the discovery of clinical tuberculosis, this case finding method needs to be supplemented in order to find tuberculosis before the disease has become advanced and has been spread to others. During this 8 month period, in addition to 44 new cases discovered in the Health Department clinic, 91 other new cases were found through the mobile unit. The community survey, which was the second most effective method of finding tuberculosis, resulted in the discovery of tuberculosis in the older as well as the younger age group.

It is noteworthy that 80 per cent of the new active cases found by the mobile unit were in the minimal stage, while of those discovered in the Health Department clinic 77 per cent were in the advanced stages of the disease. Cases in the early stages have the best opportunity for recovery. Thus the mo-

bile unit has been a valuable aid in the discovery of minimal tuberculosis in the apparently healthy population of the county.

SUMMARY

1. The results of case finding through surveys in high schools, industries, and in communities in Sumner County through five visits of a mobile photo-roentgenographic unit have been compared with the results of case finding in the routine scheduled clinics of the Health Department.

2. The age distribution of the population reached in these groups differed considerably, with the community survey reaching adults in all age groups.

3. In the population x-rayed, only 0.7 per cent of the high school group were found to have clinical tuberculosis. The percentages were higher for industrial employees (2.8) and for persons examined in the community survey (3.8). The age compositions of these groups were responsible for the differences. In the Health Department clinic 8.8 per cent of the persons examined for the first time because of symptoms or contact had tuberculosis.

4. The percentages of the examined population found with reinfection tuberculosis increased with age, with very high prevalence rates for those 55 years of age and over.

5. Through these case finding methods, 190 cases of reinfection type tuberculosis were found: 146 by the mobile unit, of which 91 were new cases, and 44 new cases through the Health Department Clinic. Thus the mobile unit was a valuable aid in the discovery of tuberculosis in Sumner County. Of the new active cases discovered by the mobile unit, 80 per cent were minimal, while of the new cases in the Health Department clinic only 23 per cent were minimal.

ACKNOWLEDGMENT is made of the assistance of E. F. Harrison, M.D., Acting Director of the Division of Tuberculosis Control, Tennessee Department of Public Health, during the period covered by this report.

Acknowledgment is also made of the assistance of Ruth R. Puffer, Dr.P.H., Director of Statistical Service of the Tennessee Department of Public Health.

ONE REASON WHY WE ASK FOR BACK JOURNALS

We have been asking readers of the JOURNAL who have back copies of the magazine which they no longer need to send them to the office. These copies are being used to complete volumes which are then sent to devastated libraries and to individuals desperately seeking to catch up on professional literature they have missed during war years.

The following letter tells more eloquently than we can how valuable these old Journals can be.

" Dear Sirs:

Way back in 1941, before the outbreak, I used to receive copies of our Journal as member and subscriber. That was shortly before I was mobilized by the Philippine Army and inducted into the service of the United States Forces in the Far East (USAFFE of MacArthur).

After the fall of the Philippines and during the Jap Occupation, I've missed our Journal. As a guerilla, I've been longing for some copies in our mountain ramparts. I couldn't even get my old copies as my house and everything in it, including the Journals, were all burned by Japs.

Now that all is well, I shall be glad to hear from you.

Sincerely,

....."

Control of Typhus in Italy 1943-1944 by Use of DDT*

LT. COL. CHARLES M. WHEELER, SN.C., AUS

Member United States of America Typhus Commission, Washington, D. C.

DURING the winter of 1943–1944 a severe epidemic of typhus fever threatened the population of Naples and Southern Italy. When Allied Forces landed in that country in September, 1943, cases of typhus had been reported dating back as early as March of that year. In December a sharp increase in the number of cases occurred and deep concern was felt for the safety of Allied troops and the Italian civilian population. Consequently immediate steps had to be taken to institute proper control measures.

HISTORY OF TYPHUS FEVER IN ITALY

Italy appears to have repeatedly escaped the ravages of severe typhus epidemics which have periodically swept over eastern and western Europe, Russia, the countries bordering the eastern end of the Mediterranean Sea, Egypt, and North Africa. Records show that the principal rickettsial infection in Italy up to 1915 was attributed to *Rickettsia conori*, the causative organisms of Boutonneuse fever which is transmitted by a dog tick, *Rhipicephalus sanguineus*.

During the 10 year period, 1915–1924, a total of 923 cases of epidemic louse-borne typhus were reported to have occurred in various parts of the country. The greatest number of cases occurred in the year 1919 following the general resettlement migration of peoples all over Europe after the cessation of hostilities of World War I. The incidence of typhus fever dropped rapidly during the next decade, 1925–1934. A slight outbreak of the disease occurred in 1926 and 1927 but soon disappeared, and for the remaining seven years no cases of louse-borne typhus were recorded.† This apparent absence of typhus in Italy continued for another 8 years broken only by the threatened severe epidemic of 1943–1944. Thus the general population of Italy apparently had not known typhus for a period of 15 years and consequently was most susceptible.

Available records show that the first cases of typhus reported in Italy occurred in the city of Bari in March, and in Aversa in April, 1943, with other scattered cases in several small villages in Southern Italy. In the city of Naples the first authentic case was reported in July, 1943.

Many theories have been formulated concerning the possible source of typhus fever in Italy. None has actually been confirmed but in the absence of final reports, refugees entering Italy from the Balkan countries and Italian Prisoners

* Based on a paper presented before the Epidemiology Section of the American Public Health Association at the Seventy-third Annual Meeting in New York, N. Y., October 3, 1944.

From the United States of America Typhus Commission, War Department, Washington, D. C.

† *Bull. Health Organ. League of Nations*, X, 1, 1943; this bulletin shows 15 deaths due to typhus over a 5 year period, 1930–1934.

of War returning from Tunisia apparently brought the infection with them and undoubtedly introduced the disease at several points in Italy.

TYPHUS IN NAPLES

Following the original introduction of typhus into a practically non-immune population, the incidence of cases in Naples rose rather rapidly during the months of November and December, 1943.

Records indicate that during the late spring and summer months of 1943, typhus had been simmering insidiously in Naples. As colder weather approached reported cases became more frequent. In October, 29 cases occurred; in November, 61 persons had contracted the disease, and by December 5, 26 new cases had been reported. This number, in comparison with only 2 cases reported during the first 5 days of November, gave warning and forecast the outbreak of a severe epidemic as the winter progressed. By December 15, 83 cases had been reported in Naples. From 83 cases by the middle of this month, the number mounted to 288 for the latter half of the month, a total of 371 cases for December.

This was the picture of the case incidence of typhus in Naples shortly before the United States of America Typhus Commission was placed in charge of the control of the epidemic. The picture of conditions in Naples and, in fact, all of Southern Italy, was in complete harmony with descriptions of the classical spread of typhus fever epidemics of former years.

In Naples estimates of the civilian population in December, 1943, varied between 750,000 and 1,000,000 persons. In addition to this huge population were hundreds of Allied soldiers, returning Italian civilians, and refugees from other war-torn parts of Italy and from across the Adriatic. Living conditions in general were congested and unsanitary. Telephone, transportation, and other public utilities were disrupted. Medical personnel for the most part were in the army. Food was scarce, "black market" prices exhorbitant, and undernourishment of the inhabitants of Naples was striking. The people were confused, frightened, cold and hungry. Leadership had changed so fast in recent weeks that the average individual scarcely knew which way to turn nor just whom to believe. The recent bombings and terrorist activities of the Germans, and then bombings by Allied Forces kept the people in a constant state of fear and anxiety. At the first wail of the air-raid alarm thousands of people would pour from their homes and crowd into the numerous air-raid shelters scattered throughout the city, of which there were 385.

The air-raid shelters (ricoveri) were most interesting. The hills of Naples on which the city is built are of a limestone formation honey-combed by huge caverns. Long, dark or dimly lighted winding staircases or sloping tunnels led down into many of these caverns to a depth of as much as 75 to 100 feet. In some of these tremendous underground rooms thousands of people were found living under quite primitive conditions. Some of the inhabitants were living more comfortably than others, having brought along with them some of their household effects, their beds and bedding. One series of caves was particularly impressive. These were arranged in three levels opening onto the face of a limestone cliff. The rooms extended more than 100 yards back into the cliff, with arched ceilings as high as 50 to 75 feet. Along the walls in the lower of the three rooms people had erected small wooden shacks, one to three stories high. As many as 3,000 persons had lived in these 3 caverns at one time or another. The second- and third-level rooms housed fewer persons and the homes here ranged from stone

"mansions" to wood, metal, and burlap covered shacks.

Not all of the ricoveri were formed from natural caverns. Many small shelters were constructed of reinforced concrete and located along the railroad yards, dock areas, etc. These shelters were small, poorly lighted, and very poorly ventilated. No sanitary facilities were available in most of them and people lived in their own filth and grime, dirt and disease. In many of these shelters typhus cases and corpses of persons dead from typhus were found, and for each one found several persons as "contacts" were free to leave the shelter and scatter infective lice to other parts of the city.

In Naples one instance of probable wholesale broadcast of infected lice is interesting. In the huge three-level grotto near *Marginella* railroad station two cases of typhus were discovered by the night control crews. The patients, a mother and her son, were in a small, one-room wooden shack deep inside the second-level cavern. Both were seriously ill and were in the only bed in the room; both were fully clothed but disgustingly and pathetically filthy, and heavily infested with lice. The father of the family was able to work during the day but slept at night in this same bed. Upon examination of his clothing he was found to be heavily infested as well. His occupation at the time was driving a horse and cart, delivering various articles to homes in scattered parts of the city. These three persons were isolated in a hospital; and shortly afterward the father also developed the disease. One wonders how many cases of typhus this man may have caused.

Many of the homes visited were nearly as filthy and crowded as the ricoveri. In some instances two and three families were living crowded into two average-size rooms in a dark, damp cold building. Children were dirty and poorly clothed. With no soap, no fuel, and poor food there was little incentive or interest among many to try to keep clean.

No definite observations were made in the beginning concerning the extent of the louse infestation among the civilian population of the city. Assurance was given that it was widespread and the percentage of infestation high. A few counts made on clothing of persons admitted to the Cotugno hospital early in the epidemic substantiated this assurance.

The following summarizes the reasons for the spread of typhus in Naples:

1. Introduction of typhus into a non-immune population
2. Crowding and overcrowding of people in homes and air-raid shelters
3. Intensive and widespread infestation with body lice
4. Scarcity of proper kinds of food
5. Bathing facilities lacking or out of order
6. Scarcity of fuel
7. Lack of adequate medical care, hospitalization, and medical supplies
8. Little or no soap available
9. Lack of proper warm clothing and sound shoes among the poorer classes
10. Disruption of water, light, and sewer systems
11. Demoralization of transportation and communication systems
12. Confusion of people due to lack of proper leadership in all city civil government branches, including the Health Department

THE TYPHUS CONTROL PROGRAM

The development of three dusting powders lethal to lice (MYL and DDT in the United States, and AL-63 in England); the demonstration in the laboratory and in the field of the effectiveness of these powders in the control of lice; and the arresting of small typhus epidemics in native villages of Mexico, Algeria, and Egypt through the use of these powders were proof that the use of louse powder in the developing typhus emergency in Italy was the control method of choice in the field.

Methods of application of powder had been studied by various groups of

investigators, particularly the Rockefeller Foundation Typhus Team in collaboration with the Office of the Chief Surgeon, North African Theater of Operations. The procedure adopted for the application of powder to the clothing of infested individuals was speedy, economical in the amount of powder used, and eliminated the necessity for the removal of the clothing from the body of the person to be dusted. Essentially the procedure consisted of forcefully blowing powder, by hand-dusters or power-dusters, between the layers of clothing worn by the individual and between the innermost layer of clothing and the skin of the body. This was accomplished by a uniform technique, inserting the nozzle of the duster up the sleeves, down the neck, (both front and back), around the waist-line, and into the crotch area of clothing. Hair and any cap or hat were dusted thoroughly. An infested person properly dusted is no longer a menace to others and will remain so for a period of at least two weeks, at the end of which time he should be redusted. Approximately 1 to 1½ oz. of powder per person is sufficient to insure the thorough dusting of all clothing worn.

Actual dusting operations were instituted on December 15, 1943, by a dusting team previously trained by a member of the Health Commission of the Rockefeller Foundation. This team of workers dusted all outbound passengers boarding a train scheduled to leave Naples for Bari. The following day, December 16, contact dusting teams were organized and sent out to addresses of reported cases of typhus emanating from homes or institutions. On the night of December 27, the first dusting of persons living in air-raid shelters was undertaken. In addition to their regular dusting duties, each team was instructed to report any new cases or suspected cases of typhus. These teams discovered many new cases which previously had not been reported to nor isolated by civil health authorities. The importance of proper case finding and reporting was so apparent that a special case finding section under Major R. L. Cherry, M.C. (AUS) of the Allied Control Commission was organized. The case finding and dusting operations were severely handicapped for the lack of proper assistants and dependable transportation.

Before the United States of America Typhus Commission was charged with the responsibility for control on January 3, 1944, many plans had to be drawn up and their values discussed. By December 26, 1943, the typhus control program, approved by the War Department, provided for six operational sections. Four of these sections were utilized from the outset, namely:

1. The case finding section
2. The contact delousing section
3. The mass delousing section
4. The immunization section

These four sections were in operation a few days before the fifth section, the flying squadron, became active. Later in the month of January a refugee delousing section was established to complete the table of organization as planned.

THE CASE FINDING SECTION

The case finding section was reorganized by and in charge of Major J. C. Snyder, M.C. (AUS) (now Lt. Col.), assisted by Major R. L. Cherry, M.C. (AUS) and 8 Italian-speaking U. S. Army physicians. Up to January 3, 1944, cases and suspects had been reported to the AMG Health Service for the City of Naples. These reports came in from various sources, with duplications in many instances. It was difficult to be sure that the cases reported were actually authentic cases of typhus fever until diagnoses were confirmed at the Cotugno Infectious Dis-

cases Hospital. However, not all cases were brought to this hospital and the problem was to discover whether these reported cases were actually typhus or some other disease easily confused with typhus in the early stages. Such was the job of the case finding section at the very beginning. Through the untiring efforts of Lt. Col. Snyder, this situation was gradually untangled and all parties concerned agreed to the proposition that the official daily list of typhus cases released by the Health Department be made up only from names of actual cases or definite suspects diagnosed either by the Cotugno Hospital staff physicians or by one of the U. S. Army physicians connected with the Typhus Commission. By intensive investigation of the back-log of reported cases by the U.S.A. Typhus Commission doctors, a gradually clearing picture of the situation began to take place, so that by January 10, 1944, this back-log of cases had been checked and case finding was put on a more logical basis.

Higher authorities directed that General Fox and the U.S.A. Typhus Commission be given the responsibility of typhus control and the Allied Military Government be responsible for ambulance, hearse service, isolation, hospitalization, and care of cases, including the steam sterilization of the clothing of cases admitted.

Organization—The work of the case finding section was accomplished through eight case finding teams, each team being in charge of a U. S. Army physician, assisted by an Italian nurse. Later in the work it was found desirable to add two persons to serve as dusters to each team. These people were transferred from the contact delousing section. A weapons carrier and driver served each team. Thus every case finding team was an independent unit.

Duties—The duties of the teams were:

1. Extensive and intensive case finding
2. Dusting of immediate family contacts as well as the patient or corpse
3. Isolation of patient (summoning ambulance)
4. Reporting of corpses found and summoning the hearse

Operation—In order to facilitate the location of addresses of reported cases, by agreement and coöperation with the contact delousing service, the city was arbitrarily divided into zones. These zones were outlined and marked on a large map of the city. Copies of this map were distributed among the other working sections of the Typhus Commission, and other copies sent to the Health Office of the AMG. As cases were reported, names, addresses, and map-reference zones were written on individual case history cards. These cards were then grouped by zones and given to the physician in charge of the team responsible for case finding in the zones assigned to him. At each address, if the case reported was a definite case of typhus or a suspect, this person was immediately dusted with the insecticidal powder by the dusters of the team, ordered to be hospitalized, and an ambulance summoned. In addition the immediate family contacts, living in the same room or house, were similarly dusted. Beds, bedding and extra clothing were also treated. In the meantime the nurse of the team was busy obtaining names of all of the persons of the family. These names were recorded on the case history card. The temperatures of all persons of the family were taken at the time of the visit.

Any person showing an elevation in temperature was placed under observation. If any suspicion of typhus was noted among these persons, they were ordered to be hospitalized at once. Mistakes of diagnosis were certain to occur, but a mistake on the safe side was not detrimental in this program. If a corpse was discovered, the clothes and

the body were dusted and the hearse summoned.

As each team reported back to headquarters, the patients' names, the names of the immediate family of each patient, addresses and map-reference zones were transferred to another card. This second card was given to the contact delousing service for further action.

CONTACT DELOUSING SECTION

Organization—The contact delousing service was reorganized and placed in charge of Major C. M. Wheeler, Sn.C. (AUS). The purpose of this section was to apply lousicidal powder to the bodies, clothing, extra clothing, beds, and bedding of definite or suspected typhus patients and contacts reported by the case finding section. At first no distinction was made between persons termed "contacts." After working with cases and contacts it was soon found that persons as contacts of typhus cases fell into three general classes: (a) contacts found in the *home* or in the immediate neighborhood, (b) contacts of cases discovered in *institutions* (such as prisons, hospitals, etc.), and (c) contacts occurring in the *air-raid shelters*. In order to deal more effectively with these three types of contacts the contact delousing section was organized to include three services; namely, the case-contact service, the "special" service, and the ricoveri service.

Each of these three services was in direct charge of a United States Army Officer assigned to, or a member of, the Typhus Commission. Each officer was assisted by an American (bi-lingual) civilian physician.

THE CASE-CONTACT SERVICE

Organization — The field working units consisted of the following personnel and equipment:

1. Squad—one nurse and two male dusters
2. Team—2–3 squads, depending upon the assignment of work
3. Weapons carrier and an enlisted man as driver

Duties—The duties of the dusting teams were as follows:

1. Continued case-contact dusting within the home or building in which cases had occurred
2. Focal dusting of all persons in dwellings within a prescribed given area in order to effect a clear area around the home
3. Reporting of all new suspects or new cases found

Operation—The cards given to this service daily by the case finding section were sorted as to map-reference zone and distributed among the six team leaders of each of the operating units on the same day or the following morning. The aim was to attempt to dust all contacts of every case on the day the case was reported. Each unit, equipped with a supply of powder and hand dust guns, visited the addresses assigned. Powder was applied in the usual manner to all persons as outlined above. If a unit had several addresses to visit, focal dusting was delayed until every patient and his household contacts were treated. Focal dusting was attempted later in the day or on the following day. In order to speed up the work of dusting the immediate family contacts, 2 dusters from the contact delousing section were assigned to work with each of the 8 case finding teams. These dusters were instructed to dust the cases and the immediate members of the family during the time of the first visit of the case finding team to the addresses in question.

The work of this department was essentially a room-by-room, house-to-house campaign in an attempt to effect a louse-free area around the place from which the case or cases originated.

SPECIAL SERVICES

The working units were made up in essentially the same manner as the units

of the case-contact service. In fact the teams of the two services were interchangeable and could be used for work of either.

Duties—The dusting teams were organized to do special project dusting of prisons, reformatories, religious institutions (if schools, then only the teaching personnel and not the school children were dusted unless typhus had been reported). Nuns and Sisters were instructed in dusting procedures and furnished some dust guns and a supply of powder, with the understanding that they were to train others and in this way accomplish the complete dusting of all the Sisters concerned. The priests were dusted in connection with the program of the immunization section. Homes for the Aged were treated on request. Carabineiri and civilian police were dusted in conjunction with the activities of the immunization section. Hospitals (general, special, mental), clinics, and sanatoria were included in the list of work for this service. Certain industrial organizations (upon request) and miscellaneous other groups of persons came under the activities of this service.

For smoothness of operation a priority list of dusting projects was established. The institutions in which cases of typhus had occurred were given highest priority. The remainder of the list was given priority based on the estimated urgency of the requests submitted to the field office of the Typhus Commission.

This service began operations with two units. The nurse in charge of each dusting team was given a work sheet on which were written the names of the institutions or groups of persons to be visited, addresses and map-reference zones. If a case of typhus had been reported, the patient's name was included on the sheet. Each team was then dispatched to the address or groups of addresses as indicated. Thorough dusting of all inmates, personnel and beds was accomplished. In some of the larger hospitals and prisons a routine dusting schedule at 14 day intervals was employed. In addition a daily application of powder was given to all new incoming prisoners brought in during the night. These prisoners were isolated in a separate wing of the prison and held until the dusting teams arrived on the following morning. Permanent dusting stations were set up by the mass delousing section to dust all incoming and outgoing patients, as well as any hospital visitors.

The special service teams worked in close coöperation with the flying squadron in assisting in carrying out a program of contact and focal dusting in nearby towns and villages. Assistance was also given to the work of the refugee section at the time of its organization.

THE RICOVERO SERVICE

This service was reorganized and placed in charge of the writer. The teams of this service were composed entirely of men:

1. Squad—An Italian civilian physician in charge, and 3 male dusters
2. Team—Two or three squads depending upon the amount of work to be done
3. Weapons' carrier and enlisted man as driver

The duties of the teams of this section were chiefly as follows:

1. Dusting of any cases, suspect cases, and corpses found in the shelters
2. Dusting of all persons, transient or permanent, living within these shelters. Dusting of beds and bedding in the shelters in which typhus had occurred or was present, or in cases where extreme lousiness was noted
3. Reporting of any new suspects or new typhus cases to the case finding section for investigation

Operation—The initial work of this service employed the services of six units. Each unit was composed of 3 squads of 4 men each. This number of

units remained the same during the period when case incidence was at its peak and for several weeks following. The number of squads was gradually reduced in proportion to the decreasing number of inhabitants found in the shelters as the epidemic died down and the fear of bombings decreased.

A list of 385 air-raid shelters comprised the work order for the teams of this service. The location of these shelters was marked on the map of the city and a list compiled of the names of these shelters grouped by map-reference zone. Each unit was given the responsibility for a certain number of these shelters in the zones assigned.

Work by necessity had to be done at night in order to be sure the majority of the inhabitants were "at home." An early curfew helped considerably in assuring the workers that the large majority of people frequenting these places would be found by the time the teams arrived. During the day the supervisor, in company with an Italian civilian employee, visited the shelters to be treated during the night. From this visit the amount of equipment and personnel necessary to complete the assignment were ascertained. In case the shelter was one of the larger ones, two units would be detailed to work this one shelter. A schedule was arranged so that each of the inhabited shelters could be visited once every 7 days. Approximately one-fourth of the shelters were inhabited more or less permanently at the time of the epidemic. Repeat check-up visits to many of the uninhabited shelters had to be made from time to time. All of the shelters in the city, as far as could be determined, were visited many times during the course of the work.

The dusting teams, as they entered the shelters, posted one or two men at each of the entrances—some ricoveri had as many as 4 separate entrances. These men were instructed to dust any stragglers entering after curfew and to prevent anyone from leaving without having been dusted. The remainder of the team members proceeded to dust, one by one, the inhabitants of the shelters. Naturally there was plenty of excitement, but very little trouble was encountered among the people, and after a few visits, the teams were received with general good feeling.

Each person dusted was examined by the doctor in charge, in order to determine if a thorough dusting job had been done. Some were turned back for a repeat dusting. Counts of the number of persons treated were made by the leader of each squad.

During air-raids and air-raid alarms, hundreds of people would swarm into the shelters. Work was then nearly impossible. What effect the numerous air-raids may have had on a rise in the case incidence during the epidemic has not been determined.

MASS DELOUSING SECTION

The mass delousing section was the function of the Typhus Team of The Rockefeller Foundation under the direction of Dr. F. L. Soper, assisted by Drs. W. A. Davis, L. A. Riehl, and F. H. Markam. This section was organized primarily for the purpose of delousing the entire civilian population of the city of Naples.

In order to carry out such a massive program, powdering stations located at strategic points throughout the city were established. Plans were formulated for the installation of 50 such delousing stations equipped to dust as many as 100,000 persons per day. These stations were located in churches, schools, railway stations, hospitals, quarantine stations on roads leading out of the city, and empty buildings. The sites were chosen based on density of population, rate of typhus in the immediate neighborhood, and convenience to homes, factories, and shops.

Each station was in charge of one person who served as foreman. He was directly responsible for the teams under him, which numbered from 4 to 24 persons depending upon the location and size of the station. The work of the stations was supervised by several Italian civilian doctors each of whom was responsible for from four to eight stations.

By January 3, 1944, 10 dusting stations had been established. This number was gradually increased to a total of 40 operating stations by February 8 in which 439 persons were employed. As the severity of the epidemic diminished the number of stations and personnel was gradually reduced.

This section, as the number of typhus cases diminished, turned a share of its attention to a survey of the various zones of the city to determine as nearly as possible the percentage of persons in the city who had been dusted one or more times, and the extent of lousiness still present. In zones where less than 70 per cent of the population reported having been dusted but one time, special house-to-house dusting, using the block as a unit, was organized on February 6. A similar system was in use by the contact delousing section about the same time. On February 14 the block dusting operations of the two sections were coördinated, and placed under the supervision of Drs. Markam and Riehl of the mass delousing section.

THE IMMUNIZATION SECTION

This section was organized by Captain (now Major) R. S. Ecke, M.C. (AUS), and Major R. L. Rogers, M.C. (AUS). Although an important section, its function was entirely apart from the DDT control program and will be discussed in a future more detailed report.

THE FLYING SQUADRON SECTION

In order to cope with the cases appearing in outlying districts the necessity for a completely mobile, self-contained case finding, immunizing and delousing service was apparent. Such a service was organized and directed by Captain (now Major) T. E. Woodward, M.C. (AUS), a member of the Typhus Commission.

Organization—The flying squadron was organized January 7 to conduct typhus control measures among civilians in towns and villages of Southern Italy.

The original plans submitted to the Field Director of the Typhus Commission called for an investigating team composed of a physician, an interpreter, and a driver. The purpose of this team was to investigate all suspects reported from areas outside Naples proper, diagnose the case, if possible, and, regardless of whether or not the patient was a definite typhus case, the team performed the following work:

1. Powdered all the family members present and the beds, bedding and extra clothing
2. Powdered other persons in the house or building who might have been close contacts
3. Vaccinated the immediate family and certain other possible contacts, using the one-dose method
4. Summoned the ambulance for isolation of the patient

While in the town the team consulted the responsible military and civilian authorities concerning future installation of mass powdering stations if conditions demanded. In areas near Naples these stations were to be organized and the work conducted by the mass delousing section, otherwise the personnel of the flying squadron would operate a temporary mass delousing station. Arrangements were also made for large-scale vaccination of hospital personnel, nurses, doctors, and certain organized civilian groups if necessary.

Up to April 1, 1944, 43 towns were visited by the teams of the flying squadron, including one trip by Major Woodward via plane, to Lecce, a town

TABLE 1

	Cases	Number of Dustings				
		Contacts	Special Service	Ricoveri	Station	Total
Naples	1,404	270,315	56,725	112,294	2,214,122	2,653,456
Outside Naples	510	201,257	....	.....	411,073	612,330
Total	1,914	471,572	56,725	112,294	2,625,195	3,265,786

(Data in the above table furnished by Dr. F. H. Markam, International Health Commission of the International Health Division, Rockefeller Foundation.)

in the " heel " of Italy. In these towns 257 cases of typhus had occurred and contacts of these cases were dusted. By September, 1944, 510 cases in 68 towns and villages in Southern Italy had occurred.

THE REFUGEE SECTION

As the war progressed the refugee problem became more and more acute. From Yugoslavia refugees came into Italy from across the Adriatic Sea and landed in scattered places along the eastern coast. Attempts by certain agencies were made to collect these refugees and bring them into one central point. At this point attempts were made to collect these people and disinfest them before transferring them to Taranto for subsequent shipment to refugee camps in Syria, Egypt, Palestine, and North Africa.

The original plans of the Typhus Commission provided for the organization of a section to deal with such conditions. Major R. S. Ecke, M.C., was instructed to organize the work on January 27, 1944.

Through the efforts of Major Ecke and under his supervision, facilities for delousing refugees and their effects were provided at all of the refugee collecting points in Southern Italy.

By January 10, 1944, within a month after control operations had been put into effect, the peak of the epidemic had been reached and a sharp decrease in the number of reported cases occurred. By February 20, 1944, the typhus fever epidemic in Naples appeared to have been definitely broken and, upon direction of Brigadier General L. A. Fox, the majority of the U. S. Typhus Commission members were called back to their headquarters in Cairo. Major Woodward and Major Ecke remained for a few weeks longer working with their respective sections in dealing with typhus outside Naples and with the refugee problem. Responsibility for further control operations was placed in charge of the Allied Control Commission under the direction of Lt. Col. W. C. Williams, M.C. (AUS).

The combined efforts of the sections responsible for the application of the lousicidal powder to the clothing and bedding of typhus patients and their household contacts apparently played the important rôle in arresting the typhus epidemic in Naples and Southern Italy. Mass delousing reduced the louse population density to a low level, and the contact delousing operations eliminated the great percentage of infective lice.

Table 1 summarizes the total number of reported cases together with the total dusting figures of all sections concerned.

At the time of writing this report, 9 delousing stations are still in operation in Naples, which handle an average of 500 persons daily who come in voluntarily to be dusted. At various localities in Southern Italy, supplies of 10 per cent DDT powder and dust guns are furnished to responsible health authori-

ties in order to take care of any local outbreaks that may occur.

In future operations the importance of case finding and contact delousing cannot be over-emphasized. These two sections must work in close coöperation at all times.

Availability of supplies, complete organization of the control program, intensive and extensive case finding, immediate isolation (hospitalization) of cases, rapid but thorough contact delousing of immediate family contacts, and sufficient and dependable transportation are cardinal points in the successful execution of a typhus control program based on the use of a lousicidal powder such as DDT.

Citizen's Planning Committee for Coördination of Voluntary Health Agencies

The Gunn-Platt report, *Voluntary Health Agencies — An Interpretive Study,* continues to make history. In response to requests from local citizen groups all over the country, the National Health Council has organized a Citizen's Planning Committee. This committee of 25 citizen-leaders in many fields of public service will furnish the leadership for a movement to coördinate the work of the 20,000 voluntary health agencies of the country. In the words of the authors, this is the outstanding need of the voluntary health field of today. "If we are to avoid authoritarian prescriptions or regimentations, we must direct our efforts toward a unified health purpose in the broadest terms, and we must build up this essential unity in service by deliberately federating the independent specialized organization from the ground up."

This committee met in New York on January 16, and organized its work for the coming year. Full details will be reported in a later issue of the *Journal.*

The members of the committee are:

Leroy A. Lincoln, Pres., Metropolitan Life Insurance Co.
Raymond B. Fosdick, Pres., Rockefeller Foundation
Chester I. Barnard, Pres., New Jersey Bell Telephone Co.
Guy Emerson, Vice-Pres., Bankers Trust Co.
Louis I. Dublin, Ph.D., 2nd Vice-Pres. and Statistician of the Metropolitan Life Insurance Co.
Irving Abramson, Chairman, C.I.O. Community Services Committee
Mason Bigelow, President, National Society for the Prevention of Blindness
Morgan B. Brainard, Sr., President, Aetna Life Insurance Company
Senator Thomas C. Desmond of New York
Charles T. Fisher, Jr., President, National Bank of Detroit
Ralph Hayes, Executive Director, New York Community Trust Company
Mrs. Shepard Krech, President, Maternity Center Association
Mrs. Albert Lasker, Secretary, National Committee for Mental Hygiene
Mrs. Oswald B. Lord, National War Fund
Mrs. William Barclay Parsons, former Administrator, Volunteer Special Services, American Red Cross
E. A. Roberts, President, Fidelity Mutual Life Insurance Company
Col. Howard A. Rusk, *New York Times*
A. J. Seymour, General Manager, National War Fund
Tom K. Smith, President, Boatmen's National Bank of St. Louis
Arthur Hays Sulzberger, President, *New York Times*
Gerard Swope, General Electric Company
Ray Lyman Wilbur, M.D., Chancellor, Leland Stanford University
Mathew Woll, 2nd Vice President, American Federation of Labor

Immunological Studies on an Epidemic of Influenza in Iceland

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IN the fall of 1943 an epidemic of influenza occurred in Iceland. In Reykjavík the first cases were reported on the 12th of October and the epidemic lasted about 5 weeks.

The disease was comparatively mild and presented the usual clinical signs—fever, headache, respiratory symptoms, etc. It is well known that an epidemic of influenza occurred in England and America at about the same time.

Figure 1 is based on statistics from Dr. M. Pétursson the Chief Health Officer for the City of Reykjavík and shows the number of reported cases of influenza during the course of the epidemic.

From these data it will be seen that the epidemic reached its highest point quickly. It should be pointed out, however, that in the week preceding the peak of the epidemic, although only 6 cases of influenza were reported, an unusual number of cases of " catarrhus respiratorius acutus " occurred. Probably several of the first influenza cases were erroneously given this diagnosis.

MATERIALS AND METHODS

It was desired to find out what type

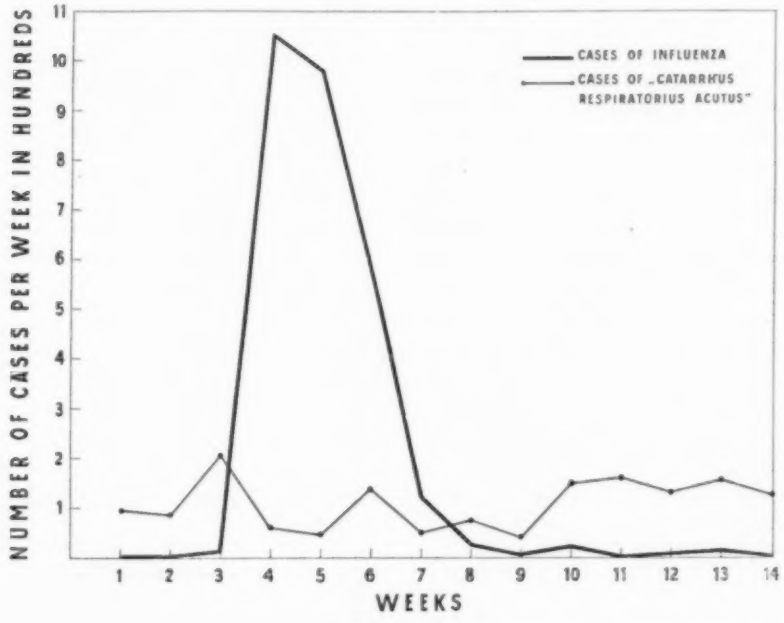

FIGURE 1

of virus had been responsible for this outbreak. An attempt was made to detect virus in nasal washings and gargles from 4 patients in the acute stage of illness. As a sufficient number of ferrets were not available, inoculations into chick embryos only could be carried out.

The nasal washings were filtered through Gradocol membranes and inoculated into eggs. The amniotic fluid was harvested 2 days later and passed into other embryos. Four such passages were carried out with each inoculum. Each time the fluids were tested for agglutinins against chicken erythrocytes by Hirst's method. No agglutinins were found and the attempts to isolate virus were thus unsuccessful.

Facilities were not available to carry out more extensive attempts to isolate virus as would have been desirable. This report is concerned with the detection of a rise in serum antibody titer against one or other of the influenza virus strains.

Samples of blood were taken from 22 patients on the first, second, or third day of illness. Second samples were obtained from 18 of these patients 3–4 weeks later.

The two samples of serum from each of these 18 patients were subsequently tested for antibodies against 3 strains of influenza virus, i.e., A, B, and swine virus.

The technic employed was that described by Hirst, utilizing the power of specific antibodies to inhibit the agglutinating effect of the virus.[1]

STRAINS OF VIRUS

The A virus was the PR8 strain, the B virus the Lee Strain, both of them brought here by one of us from the Rockefeller Institute in Princeton, N. J., U. S. A. The swine strain was kindly sent to us by Dr. C. H. Andrewes, The National Institute for Medical Research, London.

The viruses were maintained by intraembryonic inoculations in chick embryos, incubated at 37° C. for 2 days and the embryonic fluids then harvested.

In order to control the identity of the strains of virus, they were tested against known specific immune sera, using the red cell agglutination as indicator reaction.

The sera against A and B viruses were ferret sera obtained from Dr. G. K. Hirst of the International Health Division of the Rockefeller Foundation, New York, and the anti-swine virus serum was swine serum obtained from Dr. R. E. Shope of the Rockefeller Institute in Princeton.

The results of such tests are shown in Table 1. It seems beyond doubt that the virus strains were correctly labeled.

The technic employed in the main test was that described by Hirst.[1] The sera to be tested were diluted in twofold steps in saline. The lowest dilu-

TABLE 1

Control of the Identity of the Viruses Employed. The Inhibiting Effect of Known Specific Antisera on the Agglutinating Power of the 3 Virus Strains

Virus Strain	Serum	Dilution of Serum								
		1/20	1/40	1/80	1/160	1/320	1/640	1/1,280	1/2,560	1/5,120
PR8	PR8	0	0	0	0	0	0	0	0	+
	Lee	+	+	++	+++	+++	++++	++++	++++	++++
	Swine	++	++	+++	++++	++++	++++	++++	++++	++++
Lee	PR8	+	+	++	+++	+++	++++	++++	++++	++++
	Lee	0	0	0	0	0	0	0	+	++
	Swine	++	+++	++++	++++	++++	++++	++++	++++	++++
Swine	PR8	0	+	++	+++	+++	++++	++++	++++	++++
	Lee	+	++	+++	++++	++++	++++	++++	++++	++++
	Swine	0	0	0	0	0	+	++++	++++	++++

tion of serum used was 1:8 in terms of final concentration after the red cell suspension had been added. The amount of virus put in each tube was four times the quantity needed to cause a ++ agglutination in the absence of inhibiting serum.

The results are shown in Table 2.

Significantly higher titers in the second or convalescent serum samples, as compared with the first of "acute" samples from the same patients, were found against the PR8 strain and the swine virus. In ten cases a fourfold increase or more was observed against the PR8 strain and in 11 cases a similar significant rise in titer against the swine virus was observed.

Eight sera showed a significant rise against both A and swine virus, 5 sera against only one of them, and in another 5 sera no significant rise in titer against any of the strains was detected.

No significant rise in titer against the B strain was found.

DISCUSSION

The influenza epidemic that occurred in England and America in the fall of 1943 has been rather intensively studied.[2-6]

It seems to be generally agreed that A strains of influenza virus were predominant, as virus was isolated on numerous occasions and found to have the characteristics of the A strains, and a rise in antibody titer was observed against A virus but not against B strains.

No reports of titrations of antibody against swine virus in sera from this epidemic have come to our notice.

In our material a rise in titer that must be considered significant occurred against both the A strain and the swine virus. It seems to be established beyond doubt that the viruses were correctly labeled. The entire series of sera were titrated twice against both the PR8 and swine viruses with practically identical results.

Three possible explanations suggest themselves. The first is that a strain immunologically related to both the swine and the PR8 strain employed was responsible for the epidemic. Unfortunately no virus was isolated from the

TABLE 2

Titration of Antibody Against 3 Strains of Influenza Virus in Acute and Convalescent Sera from 18 Cases of Clinical Influenza

	Titer Against A Strain		*Titer Against B Strain*		*Titer Against Swine Virus*	
Case	*First Sample*	*Sec. Sample*	*First Sample*	*Sec. Sample*	*First Sample*	*Sec. Sample*
1	1/32	1/64	1/128	1/256	1/16	1/256
2	1/64	1/64	1/256	1/512	1/256	1/512
3	1/128	1/2,048	1/1,024	1/1,024	1/256	1/2,048
4	1/64	1/2,048	1/256	1/512	1/16	1/16
5	1/16	1/1,024	1/64	1/64	1/8	1/32
8	1/128	1/512	1/256	1/256	1/64	1/64
9	1/32	1/64	1/128	1/128	1/256	1/256
10	1/16	1/32	1/512	1/512	1/256	1/256
12	1/8	1/256	1/512	1/256	1/8	1/64
13	1/16	1/128	1/512	1/1,024	1/128	1/512
14	1/16	1/32	1/128	1/64	1/128	1/2,048
15	1/16	1/32	1/512	1/256	1/128	1/1,024
17	1/64	1/512	1/512	1/512	1/1,024	1/2,048
18	1/16	1/128	1/128	1/128	1/256	1/1,024
19	1/128	1/128	1/256	1/256	1/128	1/128
20	1/32	1/128	1/256	1/256	1/256	1/2,048
21	1/32	1/512	1/128	1/256	1/32	1/128
22	1/32	1/64	1/256	1/256	1/256	1/256

Figure 1 shows the number of reported cases of influenza and of "catarrh. resp. ac." during the epidemic in Reykjavik

epidemic in Iceland so this possibility cannot be directly tested experimentally.

Horsefall and Rickard [9] and others have reported a significant rise in titer against swine virus in epidemics of virus A influenza. It has been suggested that an antigenic relationship is responsible for such rises in titer against the swine virus. Recently swine influenza virus strains have been isolated in Great Britain that seem to be antigenically related to the influenza A (PR8) virus.[7, 8] These findings indicate that strains exist which combine in their antigenic make-up properties of both A strains and swine virus.

In our material a significant rise in titer against one virus only ocurred in 5 instances: 3 times against the swine virus and twice against the A strain. This fact may seem to contradict the idea that one single strain of virus was responsible for the outbreak, but might be explained as follows: It is well known that in an epidemic of influenza a considerable percentage of cases of clinical influenza may fail to show a rise in antibody titer to the responsible virus strain.

In two cases that have come to our notice, influenza virus has been isolated from patients who did not show a rise in antibody titer during the course of their illness.[5, 10] From the work on the antigenic relationship of influenza virus strains we have to assume that a given strain contains several different antigenic components, probably in different proportions, but some of them in common with other related strains.

Let us call some of these antigens in a given virus particle X, Y, etc. It is known, as previously mentioned, that influenza virus may fail to elicit any productions of antibody in case of influenza. It is reasonable to expect that in other cases a response to antigen X only is provoked or to antigen Y only. If antigen X represents the relationship of the given strain to the A virus for instance, a case with high antibody to antigen X would be classified as a probable case of A virus infection. If antigen Y represents the relationship with swine virus, a case with high antibody to Y antigen would be considered suspect for swine virus infection, especially if the response to antigen X at the same time were weak.

It is even possible that an infection with strain A may provoke a response to antigen Y only, and thus mimic a swine virus infection.

Similar explanations have already been offered by Bodily and Eaton [11] to account for immunological cross-reactions encountered in their studies on different strains of influenza virus.

The second possibility is that two strains of virus were prevalent in this epidemic, one of them related to or identical with the A strains and the other related to or identical with the swine virus. It might then be assumed that they sometimes occurred together in the same individual, as 8 of our cases showed a significant rise in titer to both A and swine viruses.

An explanation along similar lines was made by Hammon and Howitt [12, 13] with regard to western equine encephalomyelitis virus and St. Louis encephalitis virus, in outbreaks of encephalitis. They suggested that the two viruses were responsible for epidemics of encephalitis that occurred in the Yakima Valley in the summer of 1940 and in the Yakima Valley and in Arizona in 1941. Their evidence suggests the possibility that both WEE virus and St. Louis virus may be present in the same epidemic and even in the same patient, as they found in two of their cases a rise in antibody titer, that they considered significant, to both viruses.

The third possible explanation is that the rise in titer to one of the viruses is "anamnestic," or that the infection with one of the strains furnished nonspecific

stimulus to the renewed production of antibody to the other strain. It would then have to be further assumed that the persons in question had recently gone through an infection with the other strain.

This possibility however, should, we believe, be entirely disregarded for several reasons. The main reason is that the rise in titer is fairly high and is about equal for both viruses. The general experience with viruses seems to be that any considerable rise in antibody titer occurs only during actual infection with the virus, or related viruses, or after immunization.

It seems to us that, before the second or third explanation could be accepted, very strong direct evidence for their validity should be forthcoming, although the occurrence of mixed epidemics is a very interesting possibility that should be kept in mind.

SUMMARY

An epidemic of influenza occurred in Iceland in October and November of 1943. Attempts to isolate virus by inoculations in chick embryos were unsuccessful.

Using Hirst's agglutination technic, a significant rise in antibody titer against A strain and a swine virus strain was found in the sera of a majority of 18 cases studied. No rise in antibody titer against a B strain (Lee) was found. The possible significance of these findings is discussed.

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Resolutions Enacted by the United States Conference of Mayors

Among the resolutions adopted by the United States Conference of Mayors in annual conference, December 10–12 were the endorsement of the general objectives of the General Housing Bill of 1945 (S. 1592); the petitioning of Congress to enact legislation providing for 100,000 temporary family housing units and urging that such temporary housing units be operated and administered by city housing authorities or other appropriate agencies of municipal government; the petitioning of Congress to extend the expiration date of the Emergency Rent Control Act until the present housing shortage is corrected; and urging the adoption of a program of federal aid to municipalities for hospital construction, expansion, and modernization.

Public Health Field Experience

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THERE is general agreement among persons concerned with the education of public health personnel that their preparation should include a period of field experience as well as academic training. There are a number of schools which provide good academic training, including the 9 schools of public health and the 31 schools which offer accredited programs of study in public health nursing. In contrast with the fairly extensive academic resources, satisfactory field training facilities for public health personnel and professional students are extremely limited.

For the purpose of this discussion, field experience will be divided into three types. The first is provided concurrently with and is coördinated with the academic courses of the professional school. This experience may be through observation, limited program participation, or a combination of both. It provides the student with an opportunity to observe and to make prompt practical application of information gained through classroom work. The area used serves as a field laboratory for faculty and students, and should be located near the school. The second type of field experience consists of periods of observation and orientation planned for visitors, students, or newly employed personnel. Recipients of this type usually do not participate in the program. It would seem advisable for each state to have facilities with which to provide this experience. The third type of training is supervised field work. This paper is concerned for the most part with this kind of experience.

"Supervised field work for public health students" is a phrase used to describe a learning experience planned for students whereby they become supplementary health department staff members, assume responsibility, and participate in the program, but work under supervision. Students are assigned to the agency by the professional school for a specified period of time. It is comparable to the internship required for medical graduates. Such experience is a requirement of the 31 professional schools which provide accredited programs of study in public health nursing and of one school of public health for health education students preparing for the Master of Public Health degree. Other schools preparing public health personnel usually advise such experience although it is not as yet a degree requirement. In a few areas attempts have been made to provide supervised field work concurrently with the academic courses. This is generally not practical, because the field training facilities adjacent to the school can supply satisfactory experience for only a small number of students and because it is difficult for the official agency to assign real responsibility to students working on a part-time basis. For these and other reasons to be discussed it is believed that field work concurrent with academic work should be provided but that it should not take the place of the "block of full time" or internship type of supervised field experience.

MICHIGAN COMMUNITY HEALTH PROJECT FIELD TRAINING CENTER *

The Michigan Community Health Project, initiated in 1930, is a coöperative undertaking of the W. K. Kellogg Foundation with state and local agencies, and the people of seven counties in southwestern Michigan. During the early years of the project, many types of continuing education courses and workshops were provided; one of the objectives of these was to develop professional and lay leadership and to motivate persons to study and to take part in the solution of their own problems. Frequently such educational procedures were carried on in coöperation with professional schools and universities. As the various programs were developed, such schools encouraged selected graduate students to visit the area in order that they might observe and take part in the various community activities. The number of students seeking such experience increased rapidly and it soon became evident that there was a real need for field training centers where professional schools could send their students to apply under supervision the theoretical knowledge which they had acquired during the academic years. This need was especially great in the field of public health, and after due consideration the W. K. Kellogg Foundation took the initiative in developing a field training center for public health personnel and students in the seven counties of the Michigan Community Health Project.

The development of the present programs of the Field Training Center has been an evolutionary process. The experience with students during the early years served as a basis for establishing administrative patterns and standards, and for developing learning experiences to meet the individual needs of professional students. By 1937, programs had been developed for public health administrators, public health nurses, and public health engineers. Since that time field experiences have been arranged for dentists, health educators, hospital administrators, and veterinarians. For the nine fiscal years ending August 31, 1945, a total of 445 public health students have had 8,002 weeks of supervised field work, or an average of 18 weeks each. The number of weeks by type of professional student will be found in Table 1.

TABLE 1

Michigan Community Health Project Field Training Center

Students		*Weeks of Supervised Field Work by Fiscal Years*										
Type	*Number*	*1936–1937*	*1937–1938*	*1938–1939*	*1939–1940*	*1940–1941*	*1941–1942*	*1942–1943*	*1943–1944*	*1944–1945*	*Total*	*Average per Fellow*
P. H. Physicians	16	35	169	192	299	39	1	0	3	82	820	51
P. H. Dentists	4	0	0	59	56	61	0	0	0	0	176	44
P. H. Nurses	199	0	13	620	211	303	304	348	655	377	2,831	14
P. H. Engineers	181	96	1,070	1,108	768	340	108	0	24	31	3,545	20
P. H. Educators	30	0	0	0	0	0	0	0	70	209	279	9
Hospital Administrators	7	0	0	0	0	0	89	123	52	5	269	38
Veterinarians	8	0	0	0	0	0	0	0	0	82	82	10
Total	445	131	1,252	1,979	1,334	743	502	471	804	786	8,002	18

In addition to supervised field work, observation and orientation experiences were provided for large numbers of students, newly employed public health personnel, and distinguished visitors from the United States and abroad during this period. The total student weeks of all types of experience provided for the fiscal year ending August 31, 1945, will be found in Table 2. It

* Allegan, Barry, Branch, Eaton, Calhoun, Hillsdale, and Van Buren Counties

TABLE 2

Michigan Community Health Project Field Training Center Activities, 1944–1945

Profession	Supervised Field Work		Orientation Observation		Combined Total	
	Persons	Weeks	Persons	Weeks	Persons	Weeks
Physicians	2	82	23	29	25	111
Dentists	0	0	42	41	42	41
Nurses	42	377	48	51	90	428
Health Educators	20	209	36	28	56	237
Engineers	3	31	13	42	16	73
Veterinarians	8	82	0	0	8	82
Hospital Administrators	1	5	40	17	41	22
Total	76	786	202	208	278	994

will be noted that 278 persons were provided with 994 weeks of training. Of the total student weeks, 786 were of supervised field work and 208 were of observation and orientation experience.

The Field Training Center in this area is now a joint undertaking of the seven local health departments, Michigan Department of Health, the professional schools using the area, and the W. K. Kellogg Foundation. Representatives of these agencies plan the activities jointly. Programs are flexible, and the experience of each student is individualized on the basis of past experience, education, and needs. The student who comes into the area for supervised field work becomes a supplementary health department staff member. After a short period of health department and community orientation, he takes an active part in the program. At first his work is closely supervised, but as he becomes more experienced he requires less direct supervision and participates actively in the service program. The primary objective for the student is a good educational experience. To achieve this the agency staff and student must of necessity provide a high quality of community service.

The W. K. Kellogg Foundation thus far has assumed full financial responsibility for the teaching program of the field training center of the Michigan Community Health Project area. Now that such training has been recognized as an essential part of the preparation of public health personnel, it is hoped that funds with which to provide field experience will be available from official sources. In this area the cost of field training is being determined. For example, it has been found that the weekly cost of supervised field work for public health nurses for periods not exceeding 12 weeks ranges from $15 to $25, depending upon the length of the experience, whether or not the field teacher supervises more than one student, and other factors. This figure does not include travel or living expenses of trainees. It should be pointed out, however, that after a short time the student begins to give independent service and usually becomes an asset to the program. Those students remaining for a period of more than 3 months require little more supervision than the average staff member. The most expensive field experience provided in this area is that of planned observation for foreign doctors of medicine. It averages $80 per week.

The amount of funds necessary to administer the student program is estimated by the county director of health on the basis of personnel costs, student quotas, and other factors, and the W. K. Kellogg Foundation makes an annual grant directly to the county health department for this purpose. The W. K. Kellogg Foundation is also assisting a limited number of other states in extending their field training facilities.

In such states the grant is made to the state department of health to be allocated to the local field training area.

DISCUSSION

The extent of field training facilities in the United States is unknown at present and the total need has not been determined. An unpublished study * for the year 1941 revealed that a total of 533 public health students received supervised field work. This number utilized all of the desirable field training facilities available at that time. The professional schools in need of field training facilities for their students include the previously mentioned 9 schools of public health and the 31 schools providing accredited programs in public health nursing. In addition, schools of medicine, dentistry, basic nursing education, engineering, hospital administration, and veterinary medicine each year request field experience for selected students. For example, 27 schools of engineering have sent students to the Michigan Community Health Project field training center for supervised field work. With the increased number of public health personnel to be trained in the immediate post-war period, it is obvious that there is an insufficient number of field training facilities at present.

From the experience in Michigan and elsewhere it would seem that the place selected for a generalized field training program for inexperienced public health students should represent a typical cross-section of the area in which they expect to work. The first experience usually should be with an official agency. In the case of the nursing student it should provide an opportunity for her to make the transition from hospital to public health nursing through the use of her bedside skills. Unfortunately this is not possible at present for the majority of students, because most official agencies have not yet accepted the responsibility for bedside nursing, and it becomes necessary for inexperienced nursing students to have their first experience with visiting nurse associations.

The health department staff should be adequate in number and preparation to care for both the service and the teaching programs. It has been demonstrated that in order to maintain a good service program in the average community there should be a minimum of (1) a qualified medical health officer, (2) one nurse of supervisory level for 5 to 10 staff nurses, (3) one staff nurse per 5,000 people, (4) one public health engineer per 25,000 persons, and (5) a health educator for units of 50,000 population or more and for units used as field training centers. For the larger population units additional medical personnel will be needed. Also one nurse per 5,000 population will not be sufficient if more than demonstration bedside nursing is planned. The experience in the Michigan Community Health Project area indicates that field teachers should be selected from the service staff on the basis of demonstrated teaching ability. The staff member will be able to give less service to the community while engaged in field teaching; therefore, the size of the staff should be increased sufficiently to compensate for the time given to the student program.

The staff members of a health department in an area used for a student program should be selected with care. They should be qualified by education and experience, and they should be mature, emotionally stable, and sensitive persons. It should be remembered that the health officer may administer an effective service program and yet be unsuccessful with a student program. Likewise, a public health nurse may

* McGavran, E. G. Preliminary Data on Rural Field Training Centers.

provide an excellent generalized service for her district but may not have the necessary qualifications for the guidance of students.

The basic program of the health department should be well planned and developed. For example, it would be unwise to assign a young student for generalized experience to an area with excellent venereal disease and tuberculosis control activities, but with a poorly planned maternal and child health program. Such areas are suitable for mature individuals with previous generalized experience, but not for inexperienced students. Just as a young doctor should have his internship in a hospital where good medicine is practised so should the first experience for public health personnel and students be in an area where good public health is practised.

Field training areas should be approved formally on a national basis by some professional body very much as hospitals are approved for internships. It would seem logical that this should be the responsibility of the national societies of the various professional personnel or the American Public Health Association. The basic service and student program standards and health department staff qualifications should meet with the approval of the professional schools and official health agencies.

There is general agreement among persons active in the training of public health personnel that all types of students should have supervised field experience, but there is a difference of opinion as to how long the period should be for certain types. In the Michigan area the requested periods for supervised field experience range from six weeks to one year. It would seem that when the teaching of public health has been properly and sufficiently integrated into the undergraduate professional curricula, public health personnel should receive their supervised field experience as first-level staff members or internes with health departments which have been approved as field training areas. This is impossible now, however, because of lack of a sufficient number of such areas. The internship type of experience has the added advantage that students receive sufficient salary with which to pay for living expenses while receiving supervised field work.

The general supervision and coördination of field training areas should be the responsibility of the state department of health assisted by the local health department and the professional schools using the area. This assumes that there should be state department of health personnel qualified for such responsibilities. The field teaching program should be planned jointly by state and local health departments and the professional schools. It should meet national standards as well as those of the professional schools. The field training program should be administered by the staff of the local health unit. The responsibility for coördinating field and academic programs should be delegated to one or more persons who would ordinarily be on the staff of the state department of health. In the Michigan Community Health Project area such persons are on the staff of the W. K. Kellogg Foundation. However, all programs are discussed regularly with representatives of the Michigan Department of Health. The plan used for coördinating academic and field work is similar for all types of students. The program coördinators visit the schools using the area, become familiar with the academic curricula, meet the students, and review their past experience, education, and future needs. As the coördinators know the resources of the area, it is possible for them to assign the students to the county and the field teacher best suited for their

individual needs. The coördinators continue to serve as resource persons to health department staff members while the students are in the area. A faculty member of the school usually visits the area while the students are in residence.

At present requests for supervised field work in the field training center of the Michigan Community Health Project area are directed to the W. K. Kellogg Foundation by the professional schools using the area. The procedure followed in certain states is for the professional schools to make all requests to the state department of health coordinators who in coöperation with the staff of the local unit assign students according to their needs.

The citizens of the United States have a vested interest in public health personnel. The education of such personnel is expensive. Professional schools know the approximate cost of academic training, but there are very few data available concerning the cost of providing field experience. As previously mentioned, a careful study is being made in the Michigan Community Health Project area to determine the cost of such training for each type of student. The results will be reported in the future.

Since the main source of the budget for academic education in state supported schools is tax funds, it would seem reasonable that such funds should also be made available for field training. It must be remembered, however, that professional schools usually provide training for public health personnel from several states, and that it would not be fair to ask the citizens from one state to finance field experience for personnel who are to be employed elsewhere. For this reason it would seem that federal funds should be provided to pay for the major part of the field training of public health personnel. The administrative procedure for the allocation of federal funds to the local level for public health purposes is already established. Federal funds are granted to states which in turn reallocate them to local health departments for specific purposes. This same plan could be used for the distribution of funds by the U. S. Public Health Service to help provide field training facilities in the various states.

SUMMARY

One of the major problems now facing persons and schools interested in the education of public health personnel is that of providing satisfactory field experience. It is urgent that a comprehensive study of the entire problem be made. Some of the questions to be answered are: (1) What are the present field training needs and resources for public health personnel and students in the United States? (2) What are desirable standards for field training areas and how should they be established? (3) Should field training areas be approved nationally and, if so, by whom? (4) How should field training areas be administered? (5) How much does it cost to provide field training? and (6) Who should pay for field experience?

Public Health Nursing Field Experience

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AS has been indicated in a previous article,[1] seven county health departments[2] in southwest Michigan are being used by professional schools for supervised field practice in public health. During a two year period (1943–1945), a total of one hundred nurses had field experience in these agencies. The material for this article is based upon an analysis of the needs of this group of nurses.

At the present time there are 31 universities or colleges having a program of study for graduate nurses in public health, approved by the National Organization for Public Health Nursing. All students are required to have field experience in a public health agency as an integral part of this program. In 1943–1944 the following 173 agencies[3] provided field experience to the students enrolled in the 31 approved programs of study in public health nursing:

County health departments....	112
Visiting nursing associations...	34
City health departments.....	14
Boards of education.....	8
Joint services.....	3
Teaching centers.....	2

On January 1, 1945, a total of 18,701[4] nurses were employed by service agencies. This included 10,638 nurses employed by official health agencies, 4,321 by local boards of education, 4,742 by local nonofficial agencies.

The U. S. Bureau of the Census has recently given the population of our country as 140,000,000. On the basis of the present minimum standards of one nurse to 5,000 persons, there should be 28,000 nurses in public health agencies. It is obvious that professional programs of study in public health nursing need to recruit many additional students. Increased enrollments will increase the need for field experience in public health agencies. The current expansion in prepayment insurance plans for medical care also offers another reason to anticipate a demand for more nurses for whom satisfactory field experience must be provided by the schools.

Study is needed to determine the ability of the 173 agencies now offering field practice to meet the anticipated demands both qualitatively and quantitatively. Although such a study was begun in 1943, war activities hampered its conclusion. The study should determine how nearly the student fields meet the usual standards for local health practice, and review the professional qualifications of the various members of the agency staff responsible for directing the educational program for students.

Further study of field agencies should determine how adequately they are meeting the standards and objectives of field experience as outlined by the professional schools. To date there has not been a country-wide job analysis of the usual positions for which public health nurses are being prepared. Such analysis, followed by a division of responsibility between the professional school and the field agencies, would help provide the objectives of field experience for the average student, with variations for particular schools, and

for individual students who could then proceed from a base line in orderly fashion. Analyses made at the same time for each member of the public health team—the health officer, nurse, engineer, health educator, and others—would be of even greater value in clarifying responsibilities and in outlining the objectives of field practice.

The professional schools and the field agencies selected by them for student practice must work as a team so that students will benefit from an integrated educational program of study. Teaching materials from the field agencies should be utilized more fully in the classroom so that principles and practices may be more closely related. The field agencies have a responsibility to the professional schools to provide the kinds of materials which will have value to the classroom instructor. A greater degree of continuity between the professional schools and field agencies is possible when there is a public health nurse-educator responsible for coördinating the program of the school and field. The coördinator brings together all of the factors involved in planning, executing, and evaluating field practice. The effective coördinator will know the content of the academic classes in the professional school, and she will know what each field agency has to offer to students. Until national standards are developed which can be used for accrediting field agencies for student field experience, the professional school must assume this responsibility.

The professional school should expect to find the following conditions present within the field agency:

1. A service program designed to meet the needs of the community according to accepted standards for local health service
2. Community interest, participation, and support
3. Qualified personnel
4. Educational opportunities for all staff members
5. Satisfactory personnel policies and practices
6. Democratic administration
7. Good staff relationships
8. Interest of the entire staff in the student program

The leadership and vision of the public health nursing supervisor in the field agency determine to a large extent the quality of experience which students will have. The supervisor should be well prepared in the basic areas of public health nursing, and it is desirable for her to have additional preparation on an advanced level. To avoid using all supervisory time in a student program and to make use of the great opportunity for developing the capacities of staff nurses, student advisement in public health nursing is frequently assigned to superior staff nurses. It is a fundamental requisite that the supervisor should be sensitive to the dual rôle of guiding the staff nurse in the service program of the agency and of helping her to translate the principles which she uses in working with individuals and families to comparable principles of guidance in working with students.

The selection and preparation of staff nurses for student advisement or guidance is a matter for serious consideration. It should be a prerequisite that the nurse selected to interpret public health nursing to students be an experienced worker, and have demonstrated an ability to work effectively on a professional level in the various areas of public health nursing. It is essential that she should have worked in a nursing district at least 6 months, preferably a year, to provide her with a thorough knowledge of the district and the families in the area. This knowledge is needed if she is to select the kinds of field experiences which will most adequately meet the individual needs of students. It is also essential that the nurse should be in the agency this length of time to enable the super-

vising nurse to work with her, to share field visits, and to utilize fully the conference method of guidance. The supervisor will appraise the effectiveness of the work and observe the methods used by the nurse in her contacts with individuals, families, and community. During this time the supervising nurse also has an opportunity to exemplify the quality of guidance which she expects the staff nurse to use when working with students. The preparation of student advisers should be carefully planned so that the nurse is introduced gradually to the responsibility of guiding students, first as an observer and later as an assistant. Through gradual introduction and planned preparation, the staff nurse develops a sense of security in working with students.

Before students begin their field experience, the coördinator visits the agency for the purpose of meeting with members of the staff who will be responsible for the students while they are in the field. The coördinator reviews the background of each student and makes tentative plans for her field experience on the basis of previous professional preparation, experience, interests, and needs. Upon arrival in the field agency, the student is introduced to an adviser who has been carefully selected for that particular student and who will be responsible for planning, interpreting, and evaluating the experiences of the student throughout her entire time in the field agency.

During the time students are with the agency, conferences for the evaluation of progress are held. Among those present are the coördinator, the supervising nurse, and the student advisers. The conference is based on the factual information contained in the adviser's cumulative record kept for each student and upon the narrative reports written by the students. The objectives for each student are reviewed in relation to the experiences which she has had or which she still needs. These conferences provide an indirect opportunity to the coördinator and supervisor to appraise the effectiveness of the adviser's work with students. Each adviser will receive help from the coördinator and supervisor and from the other advisers in ways to improve her skills in selecting, guiding, interpreting, and analyzing the experiences planned for the student.

Student advisers who are good family teachers will find the conference method of guidance easily transferable to work with students. Sharing experiences in the field and discussing them afterward in conference is a stimulating experience for both the students and the advisers. Shared experiences may be visits to a home, school, library, social agency, physician's office, or a community meeting. Before the field visit is made, the adviser and student prepare for the experience by reviewing all pertinent information, agreeing on the objectives, and making tentative plans. Upon completion of the visit, the adviser and student analyze, evaluate, and record the visit.

The group conference in which a family situation is discussed is a guidance method which should be more generally used in field agencies. It is an educational opportunity for students to participate in the group conference in which a member of the agency staff presents a family situation for group analysis and study. Usually the nurse presenting the situation is seeking help from the group in making a more complete analysis of the needs within the family and the ways in which the nurse can be of greatest service.

Evaluation of the student's adaptability and growth should take place whenever the student and adviser discuss field experiences. The final conference should be a summarization of the entire experience and should emphasize the student's growth during the

time she has been in the field agency. Attention should be given, currently and on the conclusion of the experience, to the areas in which the student is weak and will need further help in order to render more adequate service to individuals, families, and community.

Study of the student program in the seven county health departments in southwestern Michigan has indicated the need to consider more carefully the type of field experience which will give added meaning and deeper insight into the opportunities for service in public health nursing. The seven counties follow the general objectives outlined by the professional school [5] as a base line for planning field experiences for students:

Objectives—The specific objectives of field experience will vary according to the preparation, past experience, interest, and ability of the individual student. Careful selection of experiences is necessary if she is to have enough practice in applying public health theory to a practical situation to acquire any competence as a public health nurse. In general, it is more important for her to follow a few families, or projects than to have every type of experience.

In general, the student should gain from rural field experience:

1. An appreciation of the concept of family health work and increasing ability to give family health guidance.
   a. Some ability in analyzing a family health situation, recognizing the resources and needs of the family, and seeing the relationship between health, economic, environmental, social, and psychological factors.
   b. Awareness of the family as a unit, sensitivity to family relationships, and appreciation of the relationship between the family and the community.
   c. Ability to plan and carry out a home visit.
   d. Ability to record a family health visit.
   e. Ability to evaluate her work with families and plan for improvement.
2. Ability to carry out procedures required of a public health nurse.
   a. Skill in making home visits—approaching the individual and family, giving the supervising nursing care in a rural situation as a representative of an official agency, and teaching health.
   b. Ability to establish good relationships and work coöperatively with other agencies and workers.
   c. Ability to put principles of public health nursing into practice.
   d. Ability to participate in the school program as a consultant.
   e. Ability to participate in group discussion and possibly have some experience as a leader.
   f. Skill in testing vision and hearing and in observing children; experience in assisting with clinics and with immunization, and other communicable disease programs, etc.
3. Some experience in studying a community and determining its health resources and needs.
   a. Knowledge of sources from which pertinent information can be secured.
   b. Ability to collect and interpret information about a community.
4. Acquaintance with resources and organizations which are found in a rural community and an understanding of the nurse's relationship to them.
   a. Acquaintance with rural health, social, economic, and occupational problems.
   b. Understanding of farm life and rural attitudes.
   c. Ability to work with limited facilities.
   d. Ability to utilize established groups and work with volunteers and lay committees.
   e. Understanding of the functions of state agencies and ability to work with them.
   f. Appreciation of the problems of the rural physician, teacher, social worker, county agency, etc., and ability to cooperate with these workers.

   (Visits to community agencies are usually limited to those in behalf of individuals or families with whom the student is working. General excursions are of doubtful value.)
5. Some understanding of local government and the functions of public officials.
6. Understanding of the place and functions of a local health department, its organization and support, and the responsibilities and relationships of the various personnel.
   a. Understanding of the legal obligations and limitations of the health department.

b. Understanding of the relationships of the health department to schools, private physicians, and dentists, and to county officials, and state agencies.

c. Understanding of the communicable disease program.

d. Ability to work effectively with all health department personnel.

7. Program planning.

a. Ability to plan a program for a day, week, month, and year on the basis of health needs and available nursing time.

b. Ability to select cases and plan visits effectively.

c. Opportunity to observe and possibly participate in group work, classes, clinics, and school health programs.

8. Professional development.

a. Opportunity for the student to determine her own qualifications for an interest in rural public health nursing.

b. Development of the student's ability to evaluate her own work.

c. An opportunity to experience constructive supervision and staff education.

d. Develop the student's ability to recognize her need for additional information and to use reference materials when necessary.

e. Appreciation of the need for continuous professional growth and the nurse's responsibility for her own education.

f. Develop good work habits and professional attitudes—promptness, ability to use time effectively, sense of professional responsibility.

The county health departments in southwestern Michigan which provide field experience are making additional contributions to the general objectives as set forth by the professional schools. Students will have an opportunity:

1. To see the entire agency in action and functioning as a unit.
2. To see the interrelationships of each working group within the agency.
3. To see the function of the agency in a community program and its responsibility for the overall planning to meet the total community health needs.
4. To have daily contacts with all members of the agency staff.
5. To have direct contact with the administrator of the agency for the purpose of learning his responsibility for the organization and administration of the agency and its program.
6. To have direct contact with the public health engineer and to visit with him in the field.
7. To have direct contact with the health educator if there is such a worker in the agency.
8. To work intensively with a few carefully selected families. Within these families opportunity will be provided for students to:
   a. Give bedside nursing care.
   b. Have additional experience in pediatrics with emphasis on normal growth and development.
   c. Utilize the principles learned in parent education and family relationships.
   d. Develop skills in interpretative recording.
9. To have direct contact with community groups and to have experience in community organization.
10. To plan, participate in, and evaluate group discussions.
11. To see the place of the local librarian in a community program of health education and to work with the librarian on community education projects.
12. To have direct contact with public health nursing consultants from the Michigan Department of Health and to utilize these resources in relation to specific field activities.
13. To have experience in a field agency where staff relationships are built upon broad democratic principles.

In making plans for the immediate future, the following questions need to be answered through further study of the existing practice fields:

1. To what extent will it be possible for the 173 agencies to provide field experience for more students?

2. Will it be necessary to develop additional field training centers, especially in rural areas? If so, where shall such centers be located?

3. To what extent is it feasible to consider internship in a qualified field agency which might replace the present arrangement for field experience?

4. What standards should be required of the agency before it is approved as a field teaching center?

5. How should field teaching agencies be accredited? and by whom?

6. Through what channels should the level of the present practices in field work be strengthened and improved?

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Army Medical Forces of the European Theatre Prepare for the "Battle of the Winter"

From a strategy conference of United States medical officers in the European Theatre on November 16, 1945, word comes that "it is easily possible that the fate of more lives in Europe is at stake this winter than were lost due to the entire war." The conference was attended by nearly fifty American public health officers in the U. S. zones of occupation and the British zone of Germany, who are responsible for evaluating civilian health, and planning for public health programs and procedures so that disease and epidemics will not endanger the occupation forces or displaced persons.

Serious overcrowding presents the danger of epidemics of respiratory diseases. Hence "influenza watch stations" are being set up where cases and suspected cases will receive special laboratory and clinical study.

The shortage of experienced German public health personnel presents another problem. Denazification of the German health system has removed nearly 95 per cent of experienced public health officers, nearly 85 per cent of hospital personnel, and perhaps 50 per cent of doctors from private practice.

In October, diphtheria was the most prevalent among communicable diseases in the U. S. zone. Immunization of all preschool and school children up to the age of 12 has been instituted, as well as the improvement of diagnostic facilities and intensification of reporting, isolation, and treatment of cases.

During October, penicillin became available for treatment of civilians with gonorrhea, which is second in order of prevalence. The supply of the drug will treat an estimated 225,000 cases. Its use is authorized only for the treatment of gonorrhea and its misuse severely punished. Other venereal disease control measures are: reporting of all cases, examination of all contacts and suspects, and treatment of all cases in civil venereal disease detention hospitals.

Scabies was the third most prevalent disease, due to lack of soap and personal hygiene facilities. It is hoped that supplies of benzyl benzoate will be available to supplant the usual German medications which are inferior in scabicidal value.

Typhoid fever showed a slight decrease with improvement of sanitary control of water supplies, of sanitary facilities, and of food. Infectious dysentery has also been decreased by similar measures. Scarlet fever has been kept under control as has typhus fever, 8 cases of which were reported in October. DDT stockpiles have been delivered for disinfestation immediately when typhus is reported.

Among those attending the November conference were two Fellows of the Association, Major General Morrison C. Stayer of Carlisle, Pa., and Lt. Colonel W. A. Brumfield of Albany, N. Y., currently Chief and Venereal Disease Control Officer, respectively, of the Public Health Branch, Office of Military Government, U. S. Zone, Germany.

Restaurant Sanitation in the South Pacific

CAPTAIN KEITH D. LARSON, SN.C., AUS

South Pacific Base Command

THE controlling of sanitation in civilian eating establishments can be accomplished by one of two methods: either by police enforcement of set regulations or by the usually more desirable method of education and coöperation. In the United States, a town which allows its restaurants to be operated in an insanitary manner can be put off limits, but on small islands of the South Pacific this is nearly impossible. Here on the island of New Caledonia, Noumea is the only large city. It is built around the chief harbor, and consequently all traffic must go through the town. Besides this, the recreational value of the town is inestimable, for "going to town" offers considerable relief from the otherwise monotonous life in army camps. When in town, men naturally eat French cooking.

The fact that many soldiers and sailors were eating in civilian restaurants was very evident; therefore, the Island Surgeon was faced with the problem of how best to control the sanitation of civilian eating establishments. Two apparent methods presented themselves. It could be accomplished by inspecting each establishment and putting "Off limits" signs on eating places which were assumed to be dangerous. This would necessitate a large MP and SP force to enforce the off limits, and would result in many arrests. Besides being difficult to enforce, this procedure would antagonize the local government and reduce to zero the coöperation between the civilian and military health services.

The other method would be to make inspections and approve those establishments which met or could meet the minimum sanitary standards by making certain changes. Taking everything into account, it was felt that the educational method would be the more desirable, and plans were made to carry it out. As a guide for the armed forces personnel and as an incentive for the

FIGURE 1—Approved sign being placed at the entrance of a Noumea restaurant. All "Approved signs" were posted in the presence of the restaurant operator by a military policeman under the supervision of the Island Sanitary Inspector and his interpretor.

improvement of sanitation, each establishment that was operating in a satisfactory manner would then be loaned a large white "Approved eating establishment" sign (see Figure 1).

This educational method of sanitation control seemed to be psychologically sound, and experience has shown that to be the case. Presumably, this method of sanitary control would accomplish the following:

1. Aid the French Health Service in enforcing their sanitary regulations.
2. Stop the soldiers from eating in insanitary food establishments. (This has not been entirely accomplished but the number eating in unapproved places is very few and becoming fewer daily.)
3. Encourage the French to improve the sanitation of their restaurants on a voluntary basis.
4. Give teeth to an educational program in restaurant sanitation.
5. Make possible the enforcement of a few armed forces regulations.

During the latter part of August, 1944, work was started toward the carrying out of the approved eating establishment program for the restaurants on this island.

As a first step, all French laws regarding operation of restaurants were obtained and were mimeographed in both French and English to be given to the French eating establishment operators. (See appendix 1—French Regulations for Sidewalk Cafes, and appendix 2 — Regulating Hygienic Measures Assumed for the Preparation and Sale of Food.)

An examination of these French regulations reveals them to be very complete. The regulations adequately cover all requirements for the proper operation of any eating establishment. As a matter of fact, the Ordinance and Code Regulating Eating and Drinking Establishment, as issued by the U. S. Public Health Service, is not so exacting as the French regulations.

Therefore, the Surgeon assumed that only regulations pertaining to the serving and handling of certain foods were necessary. For this purpose a letter of regulations (see appendix 3) was drafted and copies in both French and English were given to each establishment which either was on the "Approved list" or was trying to qualify for approval.

It was announced to all eating establishment owners that the "Approved signs" would be given out on October 12, 1944. Thus every establishment was given sufficient time to make the necessary changes for compliance. At the same time that the owners were informed of the date, notices were issued to all commanding officers of army and navy units to instruct their personnel to eat after October 12, 1944, only in places that displayed the "Approved sign." Since the first of January daily radio broadcasts over the armed forces broadcasting station (AFRS) in Noumea have been given advising armed forces personnel to eat only in approved eating establishments. These radio broadcasts have been very effective.

Insanitary practices which were stressed during the "pre-approval" inspections were:

1. That general cleanliness of the kitchen, dining rooms, latrines, and yards be satisfactory.
2. That there be adequate storage facilities for bread, pastries, and meat. Some form of screened-in space had to be furnished for the storage of bread, pastries, and exposed foods. (Figure 2 shows a typical box.) It was not required that mechanical refrigeration be furnished; nevertheless, many did have modern refrigerators (see Figure 3). Each establishment was required to have either mechanical refrigerators or ice boxes.
3. That adequate dish washing facilities be furnished. At first the use of boiling rinse water as a sterilizing agent for the dishes was considered satisfactory, but subsequent inspections revealed that the rinse water in most establishments was never hot enough. Consequently, a chemical disinfectant was recommended. It was also recommended that the dishes be washed in the following manner: first washed in warm soapy water; then

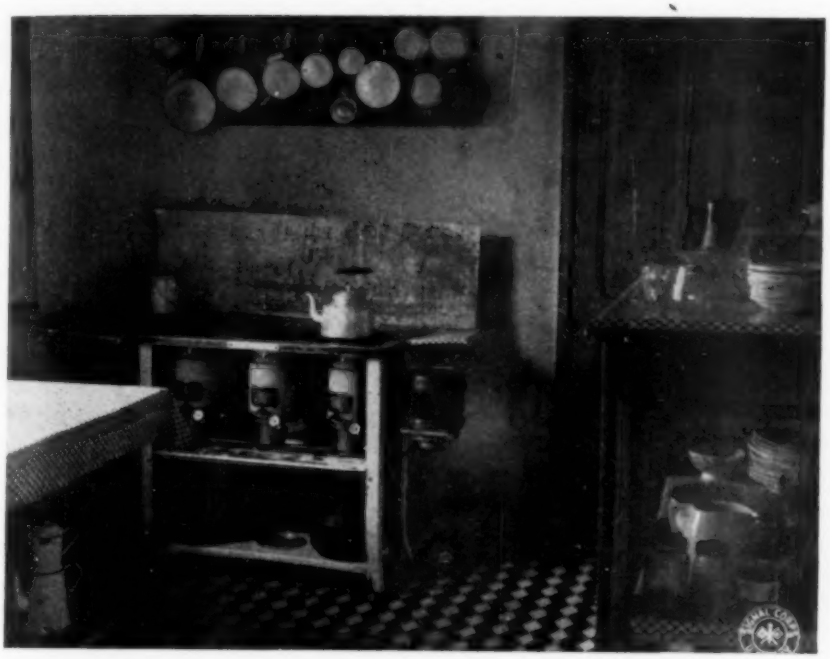

FIGURE 2—The kitchen of a Noumea restaurant showing arrangement of stove, cooking utensils, and screened-in cabinet in right hand corner. Bread and pastries are stored in bottom part of cabinet and dishes in the upper part.

FIGURE 3—Interior of a Noumea restaurant showing modern refrigerator for storing perishable foods

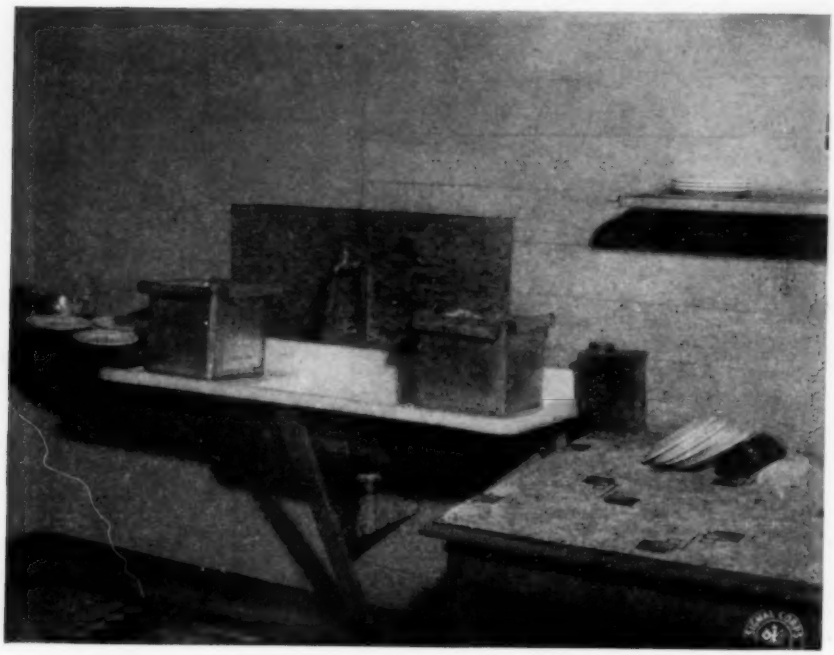

FIGURE 4—Typical improvised method of dishwashing in a Noumea restaurant using hot soapy water, rinse and disinfecting solution

rinsed in clear tap water; and finally allowed to stand for from 4 to 5 minutes in a strong chlorine solution. This was made by using 1 level teaspoonful of Calcium Hypochlorite (70 per cent available chlorine) in 20 liters of water. Following this sterilizing rinse the dishes were air dried. (Figure 4 shows an improvised setup which we feel is satisfactory.) The U. S. Army made available through Lend Lease 1,250 pounds of calcium hypochlorite for sterilization of dishes in restaurants and glasses in bars. The calcium hypochlorite was packed in convenient 5 lb. packages with removable, tight fitting lids, and the entire supply was turned over to the local French Health Department for issue.

4. That the kitchen be fly proofed by screening all outside openings. Since there was little screening available locally, and most of the screening had to be furnished on Lend Lease, the screening of the dining rooms though desirable was not recommended. In a few cases after operators saw the advantage of screening the kitchens they also screened their serving rooms by obtaining the screen from non-military sources. For this purpose the U. S. Army made available on Lend Lease 3,000 ft. of good grade wire screen which was then distributed by the local health officer.

5. That the latrines by fly and rodent proofed. In many cases, this necessitated the building of a new latrine. (Figure 5 is of a latrine built to comply with these recommendations.) Besides the fly and rodent proofing of the latrines, it was required that each latrine be furnished with seat covers and automatically closing doors. The city of Noumea does not have a domestic sewer system. Most of the human waste is collected in pail type latrines and disposed of by emptying into the bay near the city dump. A few eating establishments have modern flush closets which empty into septic tanks whose effluent runs directly into the storm sewers and street gutters.

6. That all food handlers have an up-to-date French Carte Medicale Professionnelle (French Health Office Food Handlers Certificate), and that they renew the certificate every 3 months after a physical examination at the Dispensaire d'Hygiene Sociale Institut Gaston Bourret (the French Health Office Laboratories). The local health office gives a very thorough food handler's examination, checking on intestinal parasites, and all contagious diseases with the exception of venereal diseases. When the general physical examination reveals that a food handler has a venereal disease the health certificate is not granted.

7. That the establishment complies with all

FIGURE 5—An example of a fly proof, sanitary pail type latrine which was constructed in compliance with recommendations for improving latrine facilities in order to qualify for the "Approved sign"

army regulations (see appendix 3). The French health officer asked that Regulation 1-b, "Serve no raw vegetables . . ." be changed to read, "Serve no raw vegetables except cucumbers and tomatoes." This request was considered by the Surgeon and he decided to allow the use of tomatoes and cucumbers if they were washed in boiling water and if the cucumbers were peeled. Those regulations which prohibited the serving of raw milk and inadequately refrigerated meat were enforced.

The results of this campaign have been very gratifying. It is impossible to list here all the things accomplished, but a few of the more apparent were:

1. The French health officers found that this program dovetailed with their educational program and gave their wholehearted coöperation. Dr. Tivollier, Le Medecin Commandant, Medecin du Bureau Municipal d'Hygiene, and representatives of the Surgeon meet weekly or oftener and discuss the program. On many occasions both the French and Army inspectors have gone on joint inspection trips. All recommendations, except those prohibiting the serving of tomatoes and cucumbers, were enthusiastically supported by the local health officer.

2. The patronage in unapproved eating places was so reduced that eventually all establishments except one not receiving the approved sign went out of business.

3. The voluntary improvement of sanitation by the French was satisfactory. In August, 1944, there were 37 civilian eating places patronized by the armed forces. Of this group 24 received approved signs October 12, 1944; 5 did not receive approved signs; and 8 closed voluntarily rather than comply with the regulations. Of the 5 who did not receive signs, 2 received approved signs in November; 2 closed a few weeks later; and 1 is still operating with very small patronage.

4. The education program was effectively forced upon the shop keepers.

5. The enforcement of the armed forces regulations has been satisfactory. Two eating establishments had their "Approved signs" removed for a few days for infraction of certain French regulations. The managers of those establishments soon indicated that they wished to comply and to date have operated their restaurants satisfactorily. To give teeth to removal and return of the "Approved sign" all operators have been informed that no establishment will have a sign returned after the second removal.

The improvement of sanitation under the approved program of every restaurant and shop varied. Every restaurant showed some improvement; however, in order to indicate what was accomplished a rather thorough description of the changes of one establishment are given (see appendix 4).

SUMMARY

This paper describes the successful techniques of coöperation and education developed and used by the sanitary officers of a Surgeon's Section in the South Pacific. Though complicated by the different standards of a foreign culture, this sanitation program proved entirely workable throughout the period of the occupation of this island by the armed forces.

Appendix 1

FRENCH REGULATIONS FOR SIDEWALK CAFES

1. The floors, counters, and containers

should be washed thoroughly at least twice a day, using soap and hot water, walls washed daily.

2. The food handlers should have a quarterly examination by a competent physician (French).

3. If any of the help (food handlers) have any suspicious (contagious) infection or communicable disease they should be sent home, a doctor called, and the French authorities notified immediately.

4. They (food handlers) should wear clean clothes and their personal hygiene should be above question.

5. Only boiled water should be used in all their preparations.

6. Only powdered or evaporated milk should be used in chocolate drinks, ice cream, and any other preparation of food and drink.

7. The glasses, cups, saucers, or any other containers used for food be thoroughly washed first with boiling water and soap, then thoroughly rinsed with plain boiled water.

8. No food should be exposed; bread, cake and pies, etc., should be *in* an enclosed container or receptacle.

Appendix 2

Translation
23 October 1943

ARTICLE 677—3 JUNE 1941

Regulating hygienic measures assumed for the preparation and sale of foods (victuals).

The Governor of the free French in New Caledonia and dependencies, Office of Legion of Honor.

Having noted the decree of 12 December 1874 on the government of New Caledonia and dependencies.

Knowing the decree of 20 November 1911 carrying the application of the provisions of the law of 15 February 1902 relating to the protection of public health for New Caledonia and dependencies.

Having seen the regulations 764 of 7 October 1915 determining the measures of precaution to be taken for sale of foods preliminary cooking;

According to the proposition of the colonial council of Hygiene at its meeting on 9 May 1941;

The permanent executive committee of the council agreed on the following at its meeting on 3 June 1941.

RESOLUTION

The places of manufacture of foods, bakeries, pastry shops, pork butcheries, restaurants will be regulated as follows:

The places of manufacture, handling and selling shall be spacious, abundantly aired, and enlightened by sun, and the floor will be covered with tile, brick or cement to allow washing.

(In cases of transition) Temporarily boards will be allowed in the old places. In no case will the floor be simple beaten earth. The roof shall always be in perfect condition.

These places do not necessarily have to have direct communications with dwellings and they will be removed at least ten meters from the closets.

The openings should be (supplied) covered and latticed with cloth.

The (implements) tools used in the manufacture should be kept in good condition and placed in state of propriety after every use.

The products used shall be shielded from all causes of pollution coming from markers, domestic animals, rodents or insects.

The water used in the manufacture should be furnished by canalization wherever potable water exists.

ART. 2—If the conditions of fitting out the shops and locations fixed by the preceding articles are not filled, the (exercising of the profession) permission to run the place will be withdrawn until the demandable improvements are made as per local order.

ART. 3—All the provisions destined to be eaten without preliminary cooking or washing on the part of the consumer should be kept from being soiled, especially by dust and flies by metal lattice work or cloth containers, exceptions being made in case of fruits that can be peeled or other foods that have an outside covering.

ART. 4—It is forbidden for the buyer to handle exposed foods that are to be eaten without preliminary cooking.

The foods to be eaten without cooking are comprised of bonbons, goodies, etc., and shall be served to the clients by the aid of palettes, wood or metal, with forks in hands.

The handlers shall during work wear a proper white blouse and cap.

This clothing shall not be worn except at work.

The food handlers can be forced to be examined themselves and to have a sputum examination at any time.

ART. 5—All the offenders of the preceding regulations will be punished by an imprisonment of 1 to 5 days and a fine of 1 to 15 Fr. or by one or the other of the two fines.

ART. 6—The regulation 764 of 7 October 1915 is rescinded.

ART. 7—The Secretary General, the Attor-

ney General, the Chief Judge, and the director of Public Health, are charged, each one according to his responsibility, for the execution of the present regulations.

Noumea, 3 June 1941.

SAUTOT

Appendix 3

U. S. PUBLIC HEALTH DEPARTMENT
OF NOUMEA
NOUMEA, NEW CALEDONIA

31 August 1944

To: Operators of Civilian Eating Establishments desiring to Sell to U. S. or N. Z. Armed Forces.

1. All operators of establishments wishing to sell or serve meals, lunches, food, or drinks to members of the U. S. Armed Forces or New Zealand Forces are required to observe the following rules:

a. Maintain their establishments in strict accordance with all Franch Sanitary Laws.

b. Serve no raw vegetables to United States or New Zealand personnel.

c. Serve no raw milk to United States or New Zealand personnel.

d. Serve to United States or New Zealand personnel only such ice cream as meets the U. S. Armed Forces sanitary standards for manufacture and handling of same.

e. Serve only such meat to United States or New Zealand personnel as has been kept under adequate refrigeration.

f. Permit inspection of their establishments, by United States or New Zealand Inspectors, at frequent intervals to determine whether or not the above provisions are being complied with.

2. An "approved" sign will be loaned to those operators whose establishments meet or exceed the minimum sanitary standards listed above, and who wish to serve meals, lunches, food or drink to members of the U. S. or N. Z. Armed Forces. "Approved" signs will be loaned to operators with the understanding that:

a. Signs will be placed in a prominent place on the premises.

b. "Approved" signs will be denied those establishments from which the signs have been recalled twice.

c. Operators of establishments wanting "Approved" signs will communicate with U. S. Public Health Department of Noumea.

d. "Approved" signs will be removed at any time, should an inspection show that the establishment is failing to meet the minimum sanitary standards.

W. S. DOUGLAS, Colonel, MC,
Director

Appendix 4

IMPROVEMENTS IN ONE RESTAURANT ACCOMPLISHED UNDER THE APPROVED RESTAURANT PROGRAM

As an example of what was accomplished we will select one of the restaurants which is now "Approved," and describe the conditions before instigating the approved program and the conditions as they are now. To be fair to the French, this restaurant was not typical of all restaurants, but was a good example of the more backward establishments. Some establishments had little to do other than screen the kitchen in order to comply with the recommendations for being approved.

On 23 Sept. 1944, a few weeks after the Poilu restaurant opened in the village of Paita, representatives of the Surgeon's Office made an official inspection and found conditions very unsatisfactory. At first it was felt that too many changes were needed in order to correct all the insanitary conditions noted, but the owner, M. Deplanque, asked us to make recommendations.

In the kitchen the following insanitary conditions were noted: hundreds of flies, many dirty empty food containers, a questionable dish washing set-up, much exposed food. The entire room needed thorough cleaning and repairs.

In the dining room the floors were fairly clean but needed extensive repair work; the walls needed redecorating, and the tables needed a thorough renovation.

The back yard presented the most offensive conditions. The cement drainage ditches were clogged with decaying food, poultry were feeding on the back step, a small pig pen near the back door was breeding flies by the hundreds, the latrine was nothing more than a canvas screened-in area with a tin pail under an uncovered seat. The entire back of the seat was entirely open and allowed free ingress of poultry, rodents, and flies.

To increase further the possible health hazards of this restaurant, water was being served from a questionable source, and not all food handlers had food handlers' certificates.

The following general recommendations were made:

1. The complete screening of the kitchen, and furnishing the doors with automatic closing devices.

2. Thorough cleaning of the kitchen followed by painting and repairing of floors and walls.

3. The furnishing of adequate dish washing facilities. (See description of approved method.)

4. The furnishing of adequately screened-in food storage space.

5. The furnishing of adequate cold storage.

6. The renovation of the dining room by repairing floors, tables, and redecorating the walls.

7. The removal of the pig pen.

8. The construction of a new fly and rodent proof latrine.

9. The cleaning of all drainage ditches.

10. The elimination of poultry from the vicinity of the kitchen.

11. A thorough cleaning of the back yard.

12. The furnishing of chemically treated water for drinking and kitchen purposes.

13. The obtaining of food handlers' certificates for all personnel.

To comply with these recommendations involved considerable labor and money. However, the owner, a former French soldier, seemed to be cognizant of the need for all these improvements and started to make them. During the following weeks, several reinspections were made of this establishment by armed forces inspectors who found the work progressing favorably. By 23 Dec. 1944, M. Deplanque had carried out all recommendations. He then had a clean, screened, adequately equipped, acceptable kitchen. The dining room was clean and redecorated. A new fly and rodent proof latrine was finished, the pigs were removed from the back yard, and the entire yard area was thoroughly cleaned. Every food handler had cards and actually showed signs of being proud to be a part of this reborn establishment.

Best Sellers in the Book Service for January

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Diagnostic Procedures and Reagents. American Public Health Association. 2nd ed., 1945 ..... 4.00

Government in Public Health. Harry S. Mustard, M.D. 1945 ..... 1.50

Health Instruction Year Book, 1945. Oliver Byrd, Editor. 1945 ..... 3.00

Local Health Units for the Nation. Haven Emerson, M.D. 1945 ..... 1.25

Standard Methods for the Examination of Water and Sewage. American Public Health Association. 8th ed. 1936 ..... paper 1.50

Vital Statistics Directory. American Public Health Association. 3d ed. 1945 ..... .75

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Order from the Book Service

AMERICAN PUBLIC HEALTH ASSOCIATION

Survey of the Blood Plasma Levels of Vitamin A, Carotene, Ascorbic Acid, and Tocopherols of Persons in an Area of Endemic Malnutrition

P. L. HARRIS, PH.D., K. C. D. HICKMAN, PH.D., J. L. JENSEN, PH.D., AND T. D. SPIES, M.D.

Research Laboratories, Distillation Products, Inc.; and Department of Internal Medicine, University of Cincinnati, Cincinnati, Ohio

THE problem of diagnosing subclinical vitamin deficiencies remains one of the most important on the agenda of the medical and nutritional scientist today. Early recognition and treatment of such deficiencies would be of untold value, especially in areas where nutritional lacks are endemic. If laboratory methods could be developed for the recognition of the deep-seated changes which are believed to occur during the beginning stages of deficiency diseases, most of the patients suffering from them would be spared years of ill health.

It was with this in mind that the research group in Rochester, N. Y., for the past five years conducted experiments to determine the concentration of certain vitamins in human blood plasma. The substances under most intensive study were vitamins A and E, but it soon became apparent that the concentration of carotene and vitamin C might follow the trends of the other two. Methods of measuring the four vitamins in a single sample of plasma were perfected sufficiently for daily use and a survey was started on normal subjects in the Rochester area. Search was also made for a group of admittedly deficient subjects so that a comparison could be made between plasma contents of persons in fair and poor health.

Independently and for a long time previously, the University of Cincinnati has sponsored studies in nutrition at the Hillman Hospital, Birmingham, Ala., in an area where pellagra and beriberi have been endemic. These studies yielded valuable information concerning the diagnosis and treatment of specific nutritive failure.[1] Repeated analyses of dietaries, however, confirmed the consistent clinical impression that mixed deficiency states were of most common occurrence. Individuals sustained by dietaries deficient in many essential nutrients might show specific signs of deficiency of one or two or even three such nutrients. They might show the classical syndrome of pellagra, beriberi, or scurvy. Many such persons, however, showed no specific symptom or sign, but still were distinctly ill. Clinicians spoke of a "preclinical" deficiency state; a "biochemical" lesion. Little has been said or could be said about those individuals with more

Communication No. 69 from the Laboratories of Distillation Products, Inc.

University of Cincinnati Studies in Nutrition at the Hillman Hospital, Birmingham, Ala. These studies were aided by a grant from the Ingalls Foundation.

generalized nutritive failure or of those whose illness was manifest by atypical signs.

The two groups of investigators, at Rochester and at Cincinnati, accordingly collaborated in an attempt to determine the vitamin status of admittedly deficient persons. In late 1943 a study was initiated and directed particularly toward determining the blood concentrations of ascorbic acid, vitamin A, carotene, and tocopherols in a group of patients of the clinic who seemed to eat an improper diet and had general and vague symptoms, but no diagnostic lesions uniformly recognized by physicians.

Of the patients who attended the Hillman Hospital Nutrition Clinic between March 15 and September 13, 1944, 350 were arbitrarily selected for the survey. Detailed records were available as to their symptoms, complaints, and diets for a considerable time prior to this study. Eight per cent of them were colored and most of the entire number were in a comparatively low income group.

Most of the "patients" presented the vague symptoms so often associated with B-complex deficiencies[2]: itching and burning of the eyes, photophobia, redness and thickening of the conjunctiva, burning of the tongue, nausea, diarrhea, headaches, insomnia, nervousness, tenderness of the muscles, numbness of the extremities, and loss of weight, sleep, and appetite. A few of these patients under observation have, and have had in the past, actual lesions of pellagra and riboflavin deficiency. The patients having these lesions were treated with synthetic niacin or riboflavin. After the lesions began to heal, the vitamins were discontinued but the patients still remained on their deficient diets. It should be emphasized, however, that none of the patients had acute lesions or were under treatment at the time the initial blood samples were taken. In fact, the only lesions which might be said to be apparent at all were a few residual changes around the corners of the mouth and on the tongue and skin. There were 22 such persons in this group who had had, at some previous time, mild lesions but, since their symptomatology was in every way similar to the other persons in the "patient" group, they were arbitrarily included.

It was the laboratory practice to use the blood of a normal person along with each batch of determinations. There were 70 persons in this group of so-called "normals." Included were physicians, nurses, laboratory workers, and various professional men and women in Birmingham, all essentially healthy as indicated by negative clinical findings. The individuals tested, both "patients" and "normals," ranged in age from 6 to 80 years. Males constituted 40 per cent of the patients and about 60 per cent of the "normal" group.

The investigational procedure began with a clinical examination followed by a thorough questioning as to dietary habits and past medical and nutritional history. Dietary records were made by Jean Grant, nutritionist of the Clinic. Thirty ml. of venous blood were withdrawn and the blood plasma subjected to vitamin analyses.* Red cell counts and hemoglobin determinations were also made routinely. Differential counts were made whenever it seemed of interest.

The plasma of the venous blood samples was analyzed for vitamin A, carotene, ascorbic acid, and tocopherols. Vitamin A and carotene were determined by the method of Kimble[3] and ascorbic acid by the method of Mindlin and Butler,[4] using Bessey's[5] correction

* Hugh Risley and William Swanson performed the vitamin analyses.

for turbidity, while the tocopherols were determined by a method of Quaife and Harris.[6]

No attempts were made to obtain fasting blood levels of vitamin A since Kimble [3] found that ordinary meals do not cause a measurable increase in either vitamin A or carotene within 2 to 6 hours. The vitamin A levels are reported as micrograms, since pure vitaman A was used as a standard in constructing the calibration curve. The factor 3.50 may be used to convert micrograms of vitamin A to biological "units," assuming a value of 2,000 for converting E 1%, 1 cm.; 328 mμ to "units." As a matter of interest, if we wished to convert micrograms of vitamin A to the type units used by Kimble,[3] we would multiply by the factor 2.54; to convert to the type units used by May [7] and by Youmans,[8] we would multiply by 0.39 and 3.33, respectively.

In order to minimize the effect of recent ascorbic acid intake on the blood level of this vitamin, a check was made to be sure that the patients had not eaten foods containing large amounts of ascorbic acid at the meal preceding the taking of the blood sample.

OBSERVATIONS AND DISCUSSION

The state of nutrition of the patients with respect to the vitamins tested for was found to be much inferior to that of the "normals" (see Table 1). The average vitamin A level of the patients was 72 per cent of that of the "normals," the carotene 70 per cent, the vitamin C 51 per cent and the vitamin E 75 per cent. Statistical calculations confirmed the fact that these differences were highly significant. However, in accordance with many unpublished clinical observations, it was found that persons on a very deficient diet may have high plasma levels of vitamins A, C, and E. This is an unexplained occurrence.

Vitamin A—Of our "patient" group, only 8 out of 350 were thought by any observers at all to show evidences of vitamin A deficiency, such as hyperkeratosis, thickening of the conjunctiva, etc., upon clinical examination. Five of these patients were colored.

Youman's, Patton and associates,[9] in the portion of their report dealing with the vitamin A status of a large population, criticised each diagnostic criterion which they used (diet histories, dark adaptation measurements, clinical examination, and blood vitamin A level), but concluded in general that greatest reliance can be placed on the concentration of vitamin A in the blood. They state that a concentration below the generally established normal value may be taken as evidence of a deficiency. In this connection it is interesting to note that 90.8 per cent of our patient group had blood vitamin A values below the mean value of our "normal" group. Yarbrough and Dann [10] also considered the level of vitamin A in blood as the most promising method of detecting mild vitamin A deficiency by means of a single test. In Table 2 the values are grouped quite arbitrarily according to so-called "deficient," "normal," and "well nourished" classifications. This bears out the fact that the "normals" are superior in

TABLE 1

Blood Plasma Vitamin Levels

	Vitamin A (μg.%)			*Carotene (μg.%)*		*Ascorbic Acid (mg.%)*		*Tocopherols (mg.%)*	
Group	*No.*	*Mean± S.D.*	*Range*	*Mean± S.D.*	*Range*	*Mean± S.D.*	*Range*	*Mean± S.D.*	*Range*
"Patients"	350	44±15	(14–94)	146±87	(10–571)	.45±.58	(0–1.91)	.78±.26	(.05–1.66)
"Normals"	70	61±13	(36–89)	210±31	(80–370)	.88±.42	(0–1.73)	1.04±.32	(.39–2.02)

TABLE 2

Distribution of Subjects According to Blood Vitamin A Levels

	Deficient *	*Normal* *	*Well Nourished* *
"Patients" (% of total)	76	20	4
"Normals" (% of total)	32	47	21

* Deficient individuals had blood values below 51 micrograms %
Normal individuals had blood values between 51 and 71 micrograms %
Well nourished individuals had blood values above 71 micrograms %

TABLE 3

Distribution of Subjects According to Blood Carotene Levels

	Deficient *	*Normal* *	*Well Nourished* *
"Patients" (% of total)	73	17	10
"Normals" (% of total)	27	45	28

* Deficient individuals had blood values below 175 micrograms %
Normal individuals had blood values between 175 and 250 micrograms %
Well nourished individuals had blood values above 250 micrograms %

vitamin A status to the "deficients."

Carotene—Few studies have been made regarding the variation of plasma carotene or its significance. Clausen and McCoord,[11] however, determined the plasma carotenoid level of a small group of supposedly normal persons over a period of one year and noticed a very definite seasonal trend depending on the intake of seasonal carotene-containing foods. From a minimal value of 154 μg.% in May, the average rose smoothly to a maximum of over 280 μg.% in September and then returned gradually to a minimum the following May. This is consistent with unpublished observations of Grant and Spies. Consequently, it is only when carotene levels of the test group can be compared simultaneously with those of a control group that plasma carotene measurements are significant. The evidence from our study indicated that the carotene status of individuals in the patient group was inferior to that of those in the "normal" group. Table 3, in which the subjects of both groups are arranged in an arbitrary classification, illustrates this fact quite clearly. This may have been due directly to a lower intake of food-carotene or indirectly to a poorer utilization.[12]

Vitamin C—In interpreting the significance of plasma concentrations of vitamin C, we are cognizant of the findings of Crandon, *et al.*[13] that low, and even zero, values may not be critically dangerous unless maintained at such levels for several months. Nevertheless, we are in agreement with Keuther, Telford, and Roe[14] in believing that important information with respect to vitamin C can be obtained by determining the concentration of ascorbic acid in the blood. As suspected, the concentration of ascorbic acid in the blood plasma of the patient group was significantly lower than that of the normals.

Youmans[8] contends that plasma ascorbic acid values below 0.4 mg.% represent a definite state of deficiency in which physical signs of scurvy may appear. This may be interpreted to mean that the reserve supply of ascorbic acid is lowered to the danger point. Levels from 0.4 to 0.7 mg.% are borderline, still indicating hypovitaminosis. Values of ascorbic acid generally accepted as normal range above

TABLE 4

Distribution of Ascorbic Acid Blood Plasma (Classification according to Youmans[8])

	Deficient * %	*Borderline* * %	*Normal* * %	*Well Nourished* * %
"Patients"	61	16	16	7
"Normals"	13	23	40	24

* Deficient individuals had plasma values below 0.5 mg.%
Borderline individuals had plasma values from 0.4 to 0.7 mg.%
Normal individuals had plasma values from 0.7 to 1.2 mg.%
Well nourished individuals had plasma values above 1.2 mg.%

0.7 mg.%, with those as high as 1.2 mg.% common in many well nourished patients. Individuals tested in the present study were classified in these groups as shown in Table 4. Only a negligible percentage of Birmingham patients can be considered well nourished, while a large percentage of them were in the subnormal classifications. The majority of the "normals" were concentrated in the two intermediate groups, although almost one-quarter had values above 1.2 mg.% of ascorbic acid which placed them in the "well nourished" classification.

Vitamin E—If an individual's blood level of tocopherol can be considered a measure of his status with respect to vitamin E, then the difference between the plasma levels of tocopherols for patients and "normals" can be considered of importance. It is our working hypothesis that in studies of this nature carried on over a period of several months, blood levels of the fat-soluble vitamins might reflect tissue stores of these factors. Consequently, if the storage of vitamin E in the muscle and liver is low as a result of subnormal intake or of inefficient utilization, then the blood levels eventually may also be low.

The average level of tocopherols in the blood plasma for the "normal" group in this study was 1.04 mg.%. Wechsler, *et al.*[15] reported that 12 "normal" individuals under his observation had an average value of 0.95 mg.%. Similar results were obtained by Minot and Frank [16] who found that the concentration of tocopherols in the blood of their 4 normal control children averaged 0.88 mg.%. Quaife and Harris [6] found an average value of 1.2 mg.% in a group of 13 supposedly normal individuals. Accordingly, assuming that the range of values between 0.88 and 1.2 mg.% represents normal, values below 0.88 mg.% are subnormal and above 1.2 mg.% are well nourished with respect to vitamin E, we can tabulate our results as shown in Table 5.

TABLE 5

Distribution of Tocopherol Blood Plasma Levels

	Deficient *	*Normal* *	*Well Nourished* *
Birmingham "Patients" (% of total)	67.3	26.2	6.5
Birmingham "Normals" (% of total)	31.4	40.0	28.6

* Deficient individuals had blood values below 0.88 mg.%
Normal individuals had blood values between 0.88 and 1.20 mg.%
Well nourished individuals had blood values above 1.20 mg.%

Obviously the "patient" group is inferior to the "normal" group in vitamin E nutriture.

SUMMARY AND CONCLUSIONS

A survey has been made of the distribution of vitamin A, carotene, ascorbic acid, and tocopherol concentrations in the blood of two groups of selected persons from the same locality—a group of 350 "patients" in the Nutrition Clinic and a group of 70 "normal" persons working in the same area. The "normal" persons had no symptoms, whereas the "clinic" patients all had symptoms but no diagnostic lesions.

The mean vitamin A, carotene, ascorbic acid, and tocopherol levels in the plasma of the patient group were significantly lower (72, 70, 51, and 75 per cent respectively) than those of the normals. These findings suggest that it would be worth while to administer vitamins A, C, and E, separately and under controlled conditions to determine the effect on the blood levels and whether or not there is an improvement in any of the symptoms. Such a test is now under way.

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N. Y. Academy of Medicine Reviews President Truman's Health Message

The New York Academy of Medicine, on January 3, inaugurated George Baehr, M.D., who is Director of Clinical Research at Mt. Sinai Hospital, New York, and member of the New York State Public Health Council, as President. In his inaugural address Dr. Baehr presented a statement formulated by the Academy's Committee on Medicine and the Changing Order which is making a three year study, of which the final report will be published in 1946.

The Academy endorsed that part of the President's message relating to the construction of hospitals and related medical facilities, the expansion of public health and maternal and child health services, the advancement of support by the federal government of medical education and research, and the protection of workers against loss of wages resulting from sickness and disability. It did not approve an overall national compulsory scheme of medical care. Instead it offered eight recommendations as follows:

1. That voluntary, non-profit insurance receive a thorough trial as a means of providing medical services for low-income families.

2. That in certain instances, and particularly when private resources are inadequate, government support be provided.

3. That careful experiments be conducted "at state and local levels with compulsory Government insurance, so that we may have in the near future comparative experience with the relative values of voluntary and compulsory procedure."

4. That better opportunities for continued medical education, whether graduate or postgraduate, be provided in order that requirements of newer medical services may be met.

5. That there be a gradual extension of group practice in close coöperation with high-grade hospitals.

6. That special emphasis be placed on preventive medicine in all forms of practice.

7. That basic public health services be provided for those communities that now lack them.

8. That provision be made for the education of the public in order that it may better know how to obtain treatment and coöperate in the prevention of disease.

Permanent Program for Typhus Fever Control in Memphis, Tennessee

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THE establishment of the rat control program in Memphis was due, not to the existing prevalence of rat-borne diseases, but to the realization that murine typhus is apparently spreading inland from the South Atlantic and Gulf Coast states. The program is therefore one of typhus prevention rather than control. Months of preparation, including education and administrational planning, were necessary before actual work could begin. Efforts were accelerated by the occurrence during August and September, 1943, of 6 cases of typhus (this was the total for the year) among employees in a local feed mill. It is a permanent program in the sense that permanent methods and materials are used and it has been established as a permanent activity of the Health Department.

The purpose of this paper is to present a description of events involved in the establishment of the program, and to tell of its operative methods and policies. Rat proofing, vent stoppage or rat stoppage, and rat eradication measures have been ably discussed in numerous papers and will not be dealt with in detail here except as they may relate especially to the successful prosecution of the program's objective.

ESTABLISHMENT OF PROGRAM

In November, 1943, the Typhus Control Unit of the U. S. Public Health Service assigned to the Health Department two of its field men, who remained until the following June, lending assistance in establishing the program. Also in November, 1943, the City Commission adopted an ordinance requiring in part that:

1. All existing business buildings shall be rat proofed.
2. New construction of business buildings shall include rat proofing.
3. All business buildings shall be freed of rats and maintained in a rat proof and rat free condition.
4. Responsibility for rat proofing rests with owners and that occupants of business buildings are liable for rat eradication.

The ordinance further deals with rat harborage, storage of food and garbage, and places responsibility for enforcement on the Health Officer.

Realizing that enforcement of the ordinance involved the existence of an organization capable of carrying out rat control measures on a large scale, and believing that this was not available among the local pest control and construction firms, the Health Department established a permanent Typhus Control Service within its Division of Sanitation.

Since it was planned that the program, except for administration and inspection service, should be self-supporting without profit, the problem of financing resolved into one of providing a fund with which work could be started. The County Commission provided funds for this purpose and, although the amount was not limited, around $8,000 was expended for stocks

of materials and equipment. This, in general, constitutes a revolving fund in that money collected for work performed is immediately converted into replacement supplies necessary for current and future operations.

Business blocks in the downtown shopping district were selected for the beginning of control work. This district was chosen for the dual purpose of giving protection against typhus fever to the greatest number of persons in the shortest period of time, and because of the greater publicity benefits which could be had by offering a demonstration of the work in the area most frequented by the city's population.

OPERATION OF PROGRAM

Field operations on a block by block basis began February 1, 1944, with one foreman and two common laborers forming a nucleus for field personnel. The program has as its present objective the elimination of rat life within business buildings. To attain this there are currently practised several interdependent phases:

1. *Surveys:*

Field surveys are designed to gather information which primarily is used to prepare estimates of rat control costs for presentation to building owners and occupants. For rat proofing, special field forms are provided on which items requiring attention are recorded, such as doors, ventilators, roofs, interior work, basements, etc. For each individual item the man hours and cost of materials necessary are estimated and recorded in the field. The estimator must know unit costs and must be capable of making rapid mental calculations. No recording is made of types or quantities of materials since they are furnished from a common stock available to all buildings where work is to be done.

Eradication cost estimates are based on the assumption that it will require a maximum of 3 months for the elimination of rats within the average building. Attention must be given to the degree or quantity of rat infestation, size of the building, harborage, etc., in order to decide or estimate the portion of the trapper's work day which will probably be spent in the building for this period of 3 months. Knowing the trapper's wage rate, the estimator can readily compute the estimated cost of labor involved, to which is added a small figure for contingencies such as removal of rubbish and similar harborage and for poison bait. Although an empirical formula, this has shown very accurate results thus far. Experience of personnel assigned to making estimates is the prime factor in securing accuracy.

Estimates are purposely made high in order that the work may be performed for an actual cost slightly less than the estimate, thereby fostering the good will of the individuals who are paying the bill, and further giving a safety factor in favor of the Health Department.

2. *Presentation of Work Agreements:*

Following the survey and immediately preceding actual control work, building owners and occupants are personally contacted and presented with an official letter of notification of the rat control requirements and a work agreement on which is stated the estimated costs thereof. The letter, pursuant to the ordinance, advises that the building is not rat proof and contains an infestation of rats, and orders the inauguration or completion of work within a certain time. Should an individual choose to disregard the order, this procedure permits the Health Department legally to perform the work without consent of the owner or occupant, and this in turn gives protection to the other adjacent buildings which might

be adversely affected by the omission of control measures on the one structure. This has provided for a definite continuity of operations, the lack of which would have caused disruption of plans and progress.

In presenting the work agreement, the owner or occupant is given the option of performing the work himself, to contract with a private firm, or to contract with the Health Department. Should the latter option be accepted his signature is secured on the work agreement which by virtue of good faith obligates the Health Department to perform the necessary work for a charge not greater than the estimated cost. If the former options are chosen the owner or occupant is given written minimum specifications for rat proofing and is advised that in-progress and final inspections will be made to determine compliance with requirements for both rat proofing and eradication.

3. *Rat Proofing:*

In this phase all the accepted principles, as based on the habits of rats, are employed. In general vent stoppage, the protection of exterior building surfaces is practised as originated by the Georgia Department of Public Health, with relatively little interior work being done. However, there are many situations, brought about by the condition of a building or the nature of the business carried on therein, which require complete rat proofing of interior surfaces and fixtures as well as exterior. Experience has indicated that a combination of inside and outside work, with emphasis placed on outside rat proofing, is the best economical general plan to follow.

Interior rat proofing is a second defense line, in that it discourages a reinfestation of rats which may enter a building accidentally such as in merchandise shipments or through open doors, and it facilitates eradication by eliminating harborage thereby making rats more vulnerable to eradication measures.

Special emphasis is placed on permanency of rat proofing with consideration logically being given to economy. Repairs or adjustments are made to any item on a building prior to installation of rat proofing sufficient to insure that the life of the item will then correspond to the life of the rat proofing. Sound construction methods are used which with good workmanship produce permanency and neatness.

The electric power and communications utilities are coöperating in the rat proofing work by sealing all underground cable conduits, thereby preventing the travel of rats underground from one block or section to another or from manholes into buildings, and they are accelerating their program of above-ground wire and cable removal, which eliminates many exterior rat approaches to buildings.

4. *Removal or Clean-up of Harborage:*

During and before the application of rat proofing, harborage inside buildings as is caused by improper storage of goods and discarded materials is removed from the premises or restacked in such a manner, elevated from the floor and away from the walls, that it will no longer afford rats hiding and nesting places. Results thus far indicate that this procedure is a major factor in reducing the load on the eradication crews and in minimizing the cost in many cases.

Removal and clean-up of harborage involves labor for the most part with materials being used in cases where it is desirable to construct elevated racks for usable merchandise storage. The expenses in this connection are properly chargeable to eradication rather than to rat proofing.

Coöperation with the Fire Department has in many specific cases proved

its value to this phase. In enforcing that part of the typhus control ordinance which prohibits the accumulation of rat harborage such as rubbish, this department through its organized fire prevention inspection service has assisted greatly.

5. *Rat Eradication:*

This phase requires a maximum of knowledge, ingenuity and perseverance. Measures currently employed are trapping, poisoning, and gassing.

Trapping with steel traps and wooden snap traps has produced the majority of rats obtained. Conventional procedures are used which involve setting traps in known rat runs. The longer trapping is continued the more difficult apparently it becomes to catch rats. This is probably due to the reduction in numbers, to a change in the location of their runs, and to their avoidance of traps, which demonstrates an incerasing suspicion or wariness. To increase the efficiency of trapping, ordinary baking flour in which rat foot prints are readily visible is used by trappers to determine the recent presence of rats. The flour is carried by the trapper in a small cloth sack and is spread smoothly with a trowel along known or suspected rat runs. Its use as the final step in determining whether or not a building is rat free is highly important. Six instances have already been noted of buildings where the catch of rats in traps dropped to zero remaining there for as long as 7 weeks. In one of the cases even a thorough visual inspection by several trained persons (without the use of flour) failed to disclose the definite and positive recent presence of rats, while in the others it was observed only with effort. Flour was then placed in the buildings at various points but particularly around the traps. Inspections the following day revealed the presence of rat tracks in all the buildings, and where tracks were seen around the traps they demonstrated that rats had approached the trap to within a few inches and had then withdrawn or had gone around it. This demonstrates the value of flour and clearly indicates that a fallacy exists in assuming a building to be free of rats on the strength of a zero catch with the use of traps even over a rather long period of time.

Each trapper is assigned a route which he covers daily. It has been found that an increase in the catch of rats will result in most cases if trappers are changed from one route to another occasionally and if all traps are sprung, or completely removed and replaced from time to time. The changing of trappers has the further advantage of providing men who are acquainted with routes other than their own, hence should a trapper be absent from duty the covering of his route will be made more effective and convenient.

Poisoning with the commonly used poisons and baits has been for the most part employed as a pre-rat proofing step designed to reduce the trapping burden; it is also used in combination with other eradication measures.

Gassing with hydrocyanic acid gas thus far has been confined entirely to burrows, partition walls, hollow ceilings, and to piles of rubbish or merchandise which afford rats harborage inside buildings, and some outside work has been done to reduce the chances of a reinfestation. It has been found especially valuable in conjunction with the clean-up of harborage, and will rapidly reduce a heavy rat population which might require lengthy application of other control measures to obtain the same effect. Gas is also used in buildings where the infestation has been reduced through various means but where the few rats which remain are wary of traps and bait. In this connection work at night in the kitchens of restaurants has produced results in many cases sufficient to justify the

trouble and extra work involved. Fumigation of entire buildings has not yet been attempted.

Rats obtained are tagged showing name and address of place where caught, whether dead or alive, in which type trap, or whether gassed or poisoned, on which floor of the building, and species and sex. The securing of ectoparasites and blood samples for laboratory examination has been temporarily discontinued due to the unavailability of personnel, but is considered important to the complete picture. Weekly postings showing rats caught are made on individual record sheets for each business establishment. This assists greatly in work planning.

Of the 2,349 rats caught from February 1 to October 14, 1944, 68 per cent were norvegicus and 32 per cent were of the rattus group which includes *R. r. alexandrinus, rattus* and *frugivorus*. Only two true *R. r. rattus* have been observed. It is interesting to note that comparable figures were obtained from a three-story restaurant where during a 9 week period 406 rats were caught, 70 per cent being norways and 30 per cent the rattus group.

6. *Maintenance:*

To date eradication measures have been completed in eleven of fourteen blocks which have been made rat proof. This constitutes sufficient work to justify and require maintenance. The City of Memphis ordinance directs that inspections shall be made of all rat proofed buildings at intervals of not more than 45 days, and that occupants shall maintain the buildings in a rat proof and rat free condition. To carry this out, one foreman has been assigned to inspection work. His duties are to note and record any evidence of rat infestation and any new openings which will permit rats to enter a building, serving the occupant with a notice to abate the conditions found. This necessitates reinspections to determine compliance, and offers excellent educational opportunities.

Cases encountered which required repairs to rat proofing indicate the preference on the part of occupants is that the Health Department perform the necessary work. Since the quantity of work required in the entire area has been and probably will be negligible, the Health Department has adopted the policy of catering to this preference, submitting statements of repair costs to occupants.

However, in the case of a reinfestation a different problem is presented. This has occurred to a slight degree in several of the business buildings formerly freed of rats. It may have been caused by leaks in the rat proofing, by a few rats being unknowingly left in the building when original eradication measures were terminated, by migration of rats from an adjacent building where eradication was performed by a private firm, or by the occupant whose efforts and results are not as conscientious and effective as those of the Health Department, or by the accidental reëntry of rats. Regardless of cause, this reinfestation presents a difficult and pressing problem.

Present policies are to insist that the occupant abate this condition himself or through a private contract unless, of course, it is found that the condition was the fault of the Health Department. Reasons for this are that so many cases of reinfestation to a slight degree will probably be encountered in the future that it will be impossible for the Health Department to supply the necessary personnel for this work, and further it is felt that this attitude will in time make the individual more conscious of his responsibility in the program sooner than could be otherwise accomplished.

Night inspections are made at intervals since they disclose weak points in the rat proofing which would likely not

be discovered otherwise especially as applied to doors and windows which often remain open or are blocked by display goods in the daytime. To facilitate prompt knowledge of situations where a change of occupants or remodeling occurs in buildings, thereby insuring maintenance, the municipal licensing and building bureaus advise the Health Department of permits granted in this connection.

7. *Finances:*

This function includes the keeping of records, computation of charges and the collection of money due for services rendered. For rat proofing, individual record sheets for each establishment or building are posted daily by the foremen showing actual quantities of materials and man hours used. For eradication, since the charge is based for the most part on time involved, the dates of the beginning and ending of eradication measures are recorded as they occur. These actual field records are sent to the office for examination after which they are no longer the responsibility of the Typhus Control Service.

The Health Department has its own purchasing and bookkeeping division, one of the duties of which is to compute charges for rat control services and to make collections. Hence, all field records together with the original estimate and the work agreement are forwarded to this division whose books are audited annually. Rat proofing charges are based on actual costs of materials and man hours, plus 20 per cent which covers depreciation of tools and equipment, transportation, and other overhead. To date, in 98 per cent of the cases the charge computed in this manner has not exceeded the contract estimate, and has at the same time covered costs. Methods of calculation of eradication charges are not so accurate theoretically but results demonstrate they are sufficient. As the 3 month (90 day) period is used as a basis, the actual number of days during which eradication was in progress is divided by 90 and multiplied by the contract price or estimate to obtain the charge.

All statements and invoices are submitted monthly to building owners and occupants by mail. If the amount due is not paid after the third statement, the case is referred to the legal department of the city. Thus far only two have been handled in this manner, the result being receipt of payment following one letter by the City Attorney.

One of the most necessary and convenient financial arrangements currently in use is a petty cash fund from which small emergency purchases are made. It is available for use by all field foremen and has many times prevented delays.

Through November 1, 1944, approximately $18,900 appeared on the books as the total of charges to property owners and occupants for rat proofing and eradication work done. Of this, 79 per cent has been collected. The remaining 21 per cent represents accounts receivable but not overdue.

The average cost of rat proofing to property owners to date has been $86.54 and the unit cost per business establishment has been $47.76. These figures are based on 299 establishments owned by 165 individuals. To install $1 of rat proofing materials, $2.10 in labor (3.2 man hours) has been required. The average cost of eradication to 147 building occupants has been $31.51.

PERSONNEL AND EQUIPMENT

Comprising present personnel under the direction of a public health engineer are three field foremen whose duties are to supervise the work crews in rat proofing and eradication. Of these, one acts as general foreman who in addition

to his other duties posts field records and makes original surveys and estimates. Also assigned to the program is a sanitarian who presents the work agreements to property owners and building occupants, and further assists in maintenance inspections and educational work. Twenty-two colored common laborers are currently employed, 12 being assigned to rat proofing, 8 to eradication and 2 to special work which includes maintenance. Stenographic and filing services are provided by the Health Department office.

Equipment is composed of one automobile for contact work, one ½ ton open pickup truck for errands and light hauling, one 1½ ton dump truck for heavy hauling and two 1½ ton stake trucks covered with waterproof tops and completely equipped with sheet metal bending brakes, tools and materials usually sufficient for a day's operations. All tools are furnished the workmen by the Health Department.

A storage yard of ¾ acre area located convenient to the business district is provided with a materials' storehouse and workroom, a field office, and parking space for the trucks.

GENERAL ASPECTS

Educational measures, public and personal, are and will be continuous. As a medium of presenting progress reports, pictures, special humorous and serious stories about the program, facts and other material, the local newspapers are very coöperative and are frequently used. Consideration is being given to obtaining "spot" announcements on the radio. The Chamber of Commerce and Civic Clubs also serve as effective mediums for education. To provide an official meaning for educational measures, especially with reference to building occupants who compose the group most concerned presently, the Health Department has prepared leaflets giving the essentials of rat control, sketches showing proper merchandise storage methods, and letters which are mailed to occupants upon completion of rat control work advising them in a friendly yet official way of their responsibilities for maintenance. Personal contact work is constantly in progress during daily routine field operations.

Official agencies, such as the U. S. Food and Drug Administration, the municipal Fire, Garbage, Building, and Police Departments, and the Memphis Light, Gas and Water Division which is municipally owned, are coöperative and helpful in every respect. Through their daily routine inspections of premises they are able to secure information of value to the program and are in a position to carry out extensive rat control education.

It is recognized that a rat problem also exists in the residential section of the city, and that for a control program to be complete it should be city-wide in its coverage. At the present time only advice to the householder can be offered, which is generally not satisfactory and produces little of permanent value. Plans for handling this include, when conditions will permit, attention to refuse storage and removal, harborage elimination, regular inspection services, and rat proofing in all sections of the city. Another problem is presented by future building construction, the solution of which will be the inclusion in the municipal building regulations of a rat proofing code which is presently being prepared.

A rat control program is one which is valued in the public eye solely by the visible results obtained in rat elimination and not by any array of figures which may be compiled. In consideration of this, sound principles of planning, administration, and execution must be employed. It may well be emphasized at this point that in the operation of programs of this nature

there are two basic requirements, to which all others may be considered secondary although necessary, and without which success cannot be enjoyed. These may be stated as (1) quality in performance of work, and (2) the understanding, coöperation and support of every individual or organization concerned. The first is assumed obviously to be a necessary requirement; however, unless care is exercised to avoid pressure from various sources, quality may be sacrificed for speed with failure, temporary or permanent, as the result. The latter involves appreciation by the people individually and collectively, of the magnitude of the problem of rat control, their complete and voluntary assistance and participation in it and the support of the local administration. Public support may come only with the passage of time, but the attitude of those in authority locally should be positive before the beginning of a program. They should understand the problem, be prepared to provide all the requirements for its solution, and should be willing to support its permanent maintenance.

Rat control programs are by nature long-range, and in looking to the future it is believed that with proper planning and execution, the beginning which has been made can be expanded into a city-wide program, complete in its effectiveness. It may well be that in future years the Health Department can withdraw from performing actual rat control work, confining activities entirely to inspection services as is now the practice with respect to plumbing and electrical installations.

The acceptance and absorption of health education by the public, whether forced or voluntary, through practical and successful demonstrations, is the major factor on which results depend in any program, but especially one of rat control where the public itself is so closely associated with and responsible for the very existence of the problem.

International Health Organization

The Senate Committee on Labor and Education has reported favorably on the Senate Joint Resolution for forming an international health organization and recommends its early passage by the Senate. The resolution endorses the San Francisco United Nations Conference plan for an international health organization and requests the President to urge its prompt formation upon the UNO. A recent State Department Conference of Medical experts and civic leaders suggested the following functions for the international organization.

a. World-wide collection of disease statistics as a basis for control of epidemics
b. Standardization and control of drugs and other therapeutic agents
c. Centralization, consolidation, and distribution of health and medical knowledge
d. Assistance to national health services in controlling diseases at their sources and stimulation of further development of public health services

This committee pointed out that "Disease does not respect national boundaries . . . thus to protect ourselves we must help wipe out disease everywhere."

Outbreak of Infectious Hepatitis, Apparently Milk-borne

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OBSERVATIONS with respect to the spread of infectious hepatitis [1, 2, 3] have generally indicated person to person transmission and have led many to believe that the disease spreads by droplet infection. On the other hand, from the results obtained by Cameron,[4] MacCallum and Bradley,[5] Findlay and Wilcox,[6] Havens, Paul and van Rooyen,[7] and others,[8, 9, 10] in the experimental transmission of infectious hepatitis, it appears that the disease can be transmitted artificially to man by a number of routes. Furthermore, it appears that the icterogenic agent is present in the feces of the patient and that the disease can be produced in man by feeding such material in capsules. These findings suggest that under natural conditions food and drink may serve as vehicles for transmitting the infective agent and, in so far as waterborne transmission is concerned, they are supported by the observations of Neefe and Stokes,[10] and others.[11]

The purpose of this report is to present epidemiological evidence that the icterogenic agent of infectious hepatitis may be transmitted by milk. The observations reported here are based on a study of a small outbreak of 10 cases which occurred in Forsyth, Ga., during the period of May 21 to June 28, 1945. The study was made at the request of the attending physician (S.D.W.) who had observed that all of the patients drank milk supplied by a single dairy.

The diagnosis of infectious hepatitis was based largely on the clinical picture which was quite similar to that usually described. The onset was gradual with fever, malaise, headache, and anorexia, followed shortly by epigastric distress, nausea, and usually vomiting. In several patients abdominal pain was quite marked while tenderness on the right side was generally observed. In most cases the acute symptoms subsided prior to the onset of jaundice which appeared after 3 to 10 days. With few exceptions, the jaundice lasted less than 2 weeks and was accompanied by characteristic changes in the stool and urine. None of the patients gave a history of previous injections of homologous blood products. Blood from 3 of the patients taken 3 to 4 weeks after the onset gave negative agglutinations with antigens of *Leptospira icterohaemorrhagiae*. The tests were made in the laboratories of the Georgia Department of Public Health, Atlanta, and of the Fourth Service Command, Fort McPherson, Ga.

In view of the apparent association of the outbreak with a single milk supply, visits were made to all homes supplied by that dairy. At each home

an epidemiological form was completed which included the household roster, history of illness, occupation, sources of water, milk, and other foods, neighborhood contacts, contacts with cases, school and church attendance, public gatherings attended, and other similar data. Subsequently, a canvass of the town was made in which every eighth home was visited, exclusive of those served by the dairy. During this survey information was obtained from 70 families with reference to the household roster, source of milk, and history of illness. Inquiries were also made as to any recent illness in the neighborhood or any past illness suggestive of infectious hepatitis. When such illness was reported, a visit was made to the case in question.

During the current year, infectious hepatitis was known to have occurred in only one household in Forsyth prior to the outbreak in May and June. Two cases occurred in that family. The date of onset of the second case was March 7, while that of the first, although indefinite, was at least several weeks earlier. The source of the original case was not determined but it was known that prior to his illness he had visited in another town where the disease was occurring. This family appeared to have had nothing whatever in common with those involved in the subsequent outbreak, and if any contact occurred it was purely casual.

The outbreak in May and June involved 8 households, 6 of which had single cases. The dates of onset for the first and last cases were May 21 and June 28, respectively. Onsets by weekly intervals beginning with May 21 were as follows: 1, 1, 1, 4, 2, and 1.

From inquiries relating to contact between the different households, it was learned that members of 4 of them had had occasional visiting contact with each other but not with the remaining 4 families. Of the latter, members of only 2 appeared to have had more than casual contact in the past.

As for the patients themselves, histories of exposure were obtained from some but not from others. The 2 earliest cases appeared in widely separated households which had little in common. Neither of the patients reported any previous exposure, and only the second appeared to have had contact with any of the cases which followed. The fourth and sixth cases apparently had no contact with any of the others. Each of the remaining patients gave a history of exposure to one or another of the group but, in most instances, contact was limited to convalescent cases while in some it preceded the onset of symptoms by such a few days that person to person transmission could be assumed only on the basis of an incubation period much shorter than that usually observed. In view of the experience of other contacts, however, this did not appear likely. Under similar conditions of exposure, the disease failed to spread to neighborhood contacts. Many neighborhood children had been exposed to various convalescent cases but, as of August 15, none of them had shown any symptoms of illness. Moreover, the disease did not spread readily among familial contacts. In only 2 households did second cases appear and these developed after intervals of 13 and 29 days. On the whole, the evidence relating to contact spread did not appear sufficient to explain the outbreak on that basis.

With respect to a common source of infection, evidence tending to incriminate any food or drink, except milk, was entirely lacking. Foods were obtained from several different sources and were prepared individually in each of the various homes. Only 3 of the patients had eaten meals away from home. There was no history of attendance at any common gathering where

food or drink was served. As for water, all homes in Forsyth are supplied from the same source. There was no evidence of contamination and, furthermore, the observed distribution of cases along a single milk route is not consistent with water-borne transmission. The most significant factor encountered appeared to be the common milk supply.

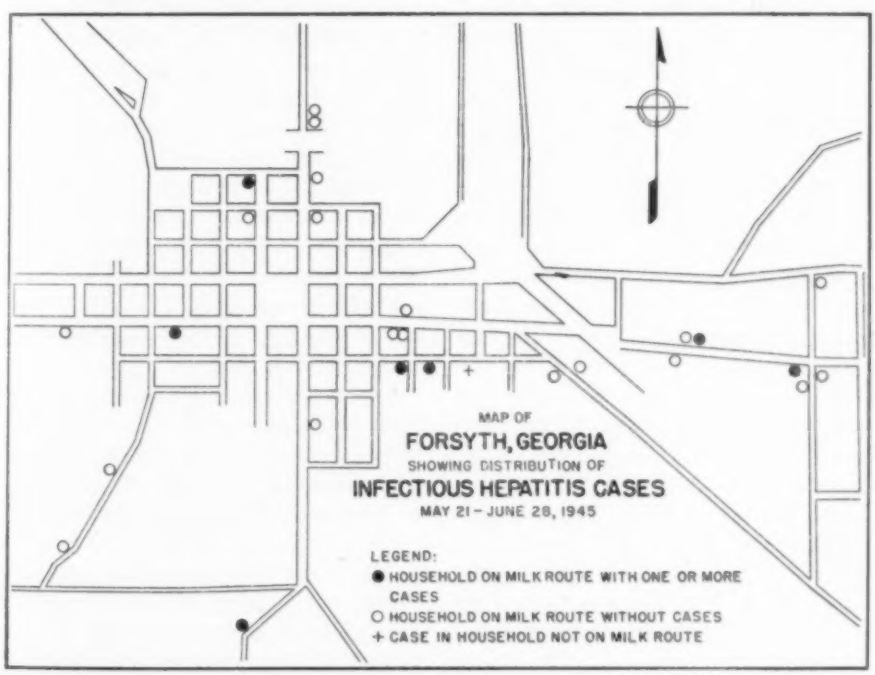
The people of Forsyth obtain milk from many sources. Five dairies supply the needs of approximately one-half of the population, while the remainder obtain whole milk from numerous small producers, canned milk from local stores, or none at all.

Based on the sample population obtained during the canvass, there are 586 households with 2,390 individuals in Forsyth. According to the United States Census, the population in 1940 was 2,372. The dairy under suspicion supplied raw milk to 26 households with 114 consumers, the figure in each instance being slightly less than 5 per cent of the total. The latter figure includes 4 persons who were not permanent members of any of the 26 households but who ate so frequenty in one or another of them that they might well be considered as regular consumers of the milk.

Of the 8 households involved in the outbreak, 7 were supplied with milk by the dairy in question. Moreover, the single case in the remaining household drank milk regularly in the home of his grandmother who was a daily customer of the dairy. One of the 10 patients actually lived in another city some 20 miles away but divided her time between her own home and that of a relative in Forsyth who was served by the dairy. From April 26 to the onset of her symptoms on June 13, she visited in Forsyth every week. During that period, no known cases occurred in the city in which she lived.

The 26 households supplied by the dairy are widely scattered throughout the town. This is shown in the accompanying map. Similarly, the households with cases are widely scattered.

As usually observed, the cases oc-


MAP OF
FORSYTH, GEORGIA
SHOWING DISTRIBUTION OF
INFECTIOUS HEPATITIS CASES
MAY 21 – JUNE 28, 1945
LEGEND:
● HOUSEHOLD ON MILK ROUTE WITH ONE OR MORE CASES
○ HOUSEHOLD ON MILK ROUTE WITHOUT CASES
+ CASE IN HOUSEHOLD NOT ON MILK ROUTE

curred chiefly among those under 20 years of age. Below are shown the attack rates by age for the 114 persons who were regular consumers of the milk.

Age (Years)	Number Persons	Number Cases	Rate per 1,000
Under 20	38	9	236.8
20 and over	76	1	13.1
Totals	114	10	87.8

Of the 10 cases with frank jaundice, 2 occurred in preschool children, 5 in school children, and 3 in persons above school age. In addition to these, 4 other individuals in the group gave a history of symptoms somewhat similar to those described above but without the appearance of jaundice. They were all under 20 years of age.

In contrast to the findings in the consumer group, only one suspicious case was found among the remaining population of Forsyth. Late in June this child developed symptoms of nausea and vomiting and a slight temperature. At the same time, it was thought that she appeared more deeply tanned than usual. Recovery was complete in 3 days. The child was not seen by a physician and the symptoms were too indefinite to establish a diagnosis. Three weeks prior to the onset, the mother of the child visited one of the frank cases of hepatitis. Other than that, there was no history of contact with any known case.

The apparent absence of infectious hepatitis among those who did not drink the milk is quite striking. There are approximately 900 persons below the age of 20 years in the non-consumer group. Had these experienced the same attack rate as those who drank the milk they would have contributed 213 cases.

The 10 frank cases in the outbreak developed over a period of more than a month. This implies either a great variation in the incubation period of the disease or the infection of different patients at different times. The latter possibility would have required contamination of the milk on more than one occasion. In view of the methods employed at the dairy, that possibility did not appear unlikely.

The dairy is located 3 miles from Forsyth and consists merely of an ordinary barn, completely devoid of all sanitary conveniences for handling milk. Approximately 100 feet from the barn is the home of the dairyman. A second house nearby is occupied by a family of relatives who moved from a neighboring state during the month of March.

No recent illness had occurred in the dairyman's family except for a mild "gastric upset" in one of 3 children which lasted for only a day or two. In the neighboring family, however, 2 cases of infectious hepatitis occurred during April and May. The symptoms in both patients were very similar to those described above. It was not possible to obtain exact dates of onset, but apparently the first case developed prior to April 15 and the second one toward the latter part of May. During this same period a third member of the family developed suspicious symptoms, but the history was too indefinite to establish a diagnosis. The source of the original case was not determined but her symptoms began within a week or two following her arrival in Georgia. There was no history of contact between these cases and those which subsequently developed in Forsyth.

This family lived in intimate contact with that of the dairyman, but apparently did not assist in caring for the milk or the utensils. Due to the primitive conditions under which the milk was prepared for delivery, however, it is possible that contamination may have occurred in other ways.

The cows were milked in a yard adjacent to the barn. The milk was then carried to a table located in the open near the barn and was simply poured

into the bottles. Everything was done by hand without any apparent attempt to prevent contamination.

Water for washing the utensils was obtained from an open, chain and bucket, dug well located about 20 feet from the table on which the milk was handled. Contamination of the well could have occurred from surface drainage or from the hands of anyone who raised a bucket of water. Experience with wells of this type has shown that in practically all instances the water shows evidence of contamination and, therefore, no samples were collected for bacteriological examination.

Located less than 100 feet from the well was a dilapidated surface toilet which was used by both families. Drainage from that point did not appear to be in the direction of the well. Apparently, however, it was not a rare practice for urine and feces to be deposited elsewhere on the surface of the ground.

Flies were numerous and were much in evidence during milking hours. They had easy access to the toilet as well as to the milk bottles and all other utensils. This combination of circumstances—numerous flies, insanitary surroundings, and unprotected food—has previously been noted in connection with an outbreak of infectious hepatitis.[12]

It is apparent that conditions at the dairy were such as to make it possible for the infective agent to gain entrance to the milk supply. It may have been carried by flies or it may have reached the milk through the water supply. Moreover, in view of the intimate contact between the two families, other possibilities cannot be excluded. In any event, contamination might well have occurred on more than one occasion.

SUMMARY

The evidence gathered during the course of this investigation, while purely circumstantial in character, points quite definitely toward a single milk supply as the source of the outbreak. The sequence of events and the distribution of cases follow the general pattern observed in milk-borne outbreaks of other diseases. It was established that, prior to the outbreak, at least 2 cases of infectious hepatitis lived in close proximity to the source of the milk supply. Conditions at the dairy were such that contamination of the milk was possible. Subsequently, within the limits of the incubation period, cases appeared among consumers of the milk but not among non-consumers who were 20 times more numerous. Considering the conditions at the dairy, together with the observed distribution of cases, the possibility of the outbreak being unrelated to the milk supply appears to be remote.

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MAZŸCK PORCHER RAVENEL

WITH the death of M. P. Ravenel on January 14, 1946, there passed one of the very few survivors of a unique band of pioneers—men who brought the new science of bacteriology to the United States, and who built upon its firm foundation the modern practices of public health.

Ravenel was born at Pendleton, S. C., some eighty years ago,[1] of a French Hugenot family which has given to its state and nation a remarkable number of men of distinction in science and in medicine. He took his medical degree at the Medical College of South Carolina in 1884, and studied at the University of Pennsylvania, at the Pasteur Institute, at Halle and Genoa. He taught at his medical alma mater, and practised medicine in Charleston for six years. In 1895, he was the first director of the Hygienic Laboratory of the New Jersey State Department of Health. Between 1896 and 1907, he worked in Philadelphia, teaching at the University and serving as bacteriologist of the Pennsylvania State Live Stock Sanitary Board and as Chief of the Laboratory of the Phipps Institute. In 1907 he went to Wisconsin as Professor of Bacteriology; and in 1914 became Professor of Preventive Medicine and Medical Bacteriology, and Director of the Public Health Laboratory at the University of Missouri, a post which he held until 1936.

The major part of his life was spent as a teacher (with time out for service as a Major and Lieutenant-Colonel in the Army Medical Corps during the first World War). His research contributions were chiefly in the field of diseases common to animals and men (anthrax, rabies, and tuberculosis).

While with the Pennsylvania Live Stock Commission, he demonstrated the transmissibility of bovine tuberculosis to man (1902); and, in 1908, at the Sixth International Congress on Tuberculosis, courageously and successfully challenged the great Koch on this point. He made substantial contributions to our knowledge of milk sanitation and was an early and ardent champion of pasteurization.

Dr. Ravenel had a fine historical perspective, and his editorship of *A Half Century of Public Health,* the Jubilee Historical Volume of the American Public

Health Association (1921) gave us a record which will always remain a classic in the history of our science.

This was but one of many services which Ravenel rendered to the Association. He was its President in 1920; and from 1924 to 1941 was the Editor-in-Chief of this *Journal*. He took it over as "an ordinary association record book" and handed it on as "the outstanding public health publication in this country."[2] In the entire history of the *Journal* no one man, or any group of men, has made such significant contributions to its success as Dr. Ravenel.

What a man is, is even more important than what he does. Ravenel's great contribution to his colleagues and to the cause he served was Ravenel. In the remarkable tributes paid to him on the occasion of his designation as Editor Emeritus five years ago,[3] there recur such phrases as "vigor," "devotion," "integrity," "forthrightness," "uncompromising scholarship." He did not suffer fools or blunderers gladly. He "punctured balloons" with ardor. He was a "paternal castigator" of the careless and inexact. These phrases help to build up a picture of the Ravenel we knew and honored—a man of wide and exact knowledge, of ardent devotion to the truth and to the causes which he served, of relentless courage and integrity. This *Journal*, this Association, and the cause of public health in the United States owe to M. P. Ravenel a deep and abiding gratitude.

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PROBLEMS OF NEONATAL MORTALITY

RECENT years have brought marked reductions in infant mortality in this country, so that in some areas rates below 30 are now recorded. This result has been accomplished by a marked decline in the number of deaths occurring after one month of age, and due to gastroenteritis, acute infectious diseases, and respiratory diseases. In contrast, deaths within the first month of life attributed to natal and prenatal causes have not declined as rapidly. To the latter causes, four-fifths of infant deaths under one month of age have been attributed. It is evident that further substantial reductions in infant mortality rates await development of methods of preventing deaths commonly associated with birth injury, congenital malformations, and premature birth.

Such causes of infant deaths have long been a problem to pediatricians and obstetricians but today new knowledge seems to be available which should help us to deal with them. It is therefore of particular interest to have three of these causes—the Rh factor, vitamin K, and the rubella virus—discussed in detail in a special review article prepared for this issue of the JOURNAL by Dr. Edith L. Potter. Not all experts would agree with Dr. Potter's conclusions concerning the value of giving vitamin K routinely in pregnancy. The Johns Hopkins Hospital, for example, we are informed, uses vitamin K prophylactically and has not had a single case of hemorrhagic disease of the new-born in the last 10,000 deliveries, a condition not prevailing before the use of this procedure.

What does all this mean for health departments and for physicians and institutions concerned with the prevention of infant morbidity and mortality?

Dr. Potter has estimated that there were 8,000 infant deaths (including stillbirths) in the United States in 1943 due to erythroblastosis. She bases her estimates on the diagnoses made in the Lying-In Hospital in Chicago, probably a highly selected sample. In New York City, in the period of a special study of this problem, there were 65,489 live births, with 43 deaths attributed to erythroblastosis, an incidence of 6.6 per 10,000 live births. In the same period of time there were 11 deaths due to congenital syphilis, an incidence of 1.7 per 10,000. It should be noted that Rh testing is a fairly general practice in New York City and Wassermann testing in pregnancy is mandatory. Thus, under conditions probably as good as any which prevail in this country, there are almost four times as many infant deaths associated with the Rh factor as with the *Treponema*. It therefore seems important for health departments to concern themselves with the Rh problem. Some may wish to provide the private physician through their own laboratories with Rh tests, even as diagnosis of diphtheria cultures and Wassermann tests are provided. Some may supervise other laboratories in which Rh tests are done or supply materials for such testing. (The technique is simple, usually requiring only an hour's incubation at 37° C. with a potent antiserum and a satisfactory reading.) Some departments may supervise or even operate blood banks. It must be recognized that, until further control measures are developed, deaths and morbidity associated with the Rh factor will continue, but accurate diagnosis is always a first step in any preventive program.

The provision of vitamin K by health departments for the possible prevention of hemorrhage does not seem out of line with the provision of toxoid for prevention of diphtheria or of anti-syphilitic drugs. Deaths from hemorrhagic disease are equally preventable.

Certainly further study of the problem of rubella infections and congenital malformations is indicated. Albaugh [1] has recently reported that " 100 per cent of the mothers who contract rubella in the first two months, and approximately 50 per cent of those who contract it during the third month, will give birth to infants with congenital anomalies." Cataracts, cardiac septum defects and patent ductus arteriosus, deaf mutism and microcephaly are common lesions, and nearly all of the infants are poorly developed and present feeding problems.

Further clinical studies on the efficiency of gamma globulin and protective sera in preventing damage due to the rubella virus are needed; and our state and city health departments are in a position to supplement such clinical investigations by detailed routine analysis of birth certificates and intensive study of infant deaths.

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DOGS AND BABIES

THE State of New York is in the throes of one of the bitterest attacks on the freedom of scientific investigation which have confronted the legislature of any state in recent years. The particular form of the assault on the present occasion is a demand for the exemption of dogs from medical experimentation which is being advocated with daily iteration by an irresponsible section of the public press.

For the moment, the anti-vivisectionists have apparently abandoned their high ethical principles which would logically forbid the taking of animal life in any form. They are not concerned with the wanton destruction of malaria-carrying mosquitoes or with the slaughter of food animals. They have even forgotten the guinea pig for whom they have been so solicitous in the past. Only the canine is now singled out as having natural rights which contravene the most fundamental bases of the public welfare and which would cut short the brilliant progress of medical science in the saving of human life.

It happens that the writer of this editorial is known to all his friends as a doting dog owner; but he happens also to be a father. He knows, as every intelligent person should know, that the entire framework of modern medicine rests upon animal experimentation; and that in many lines of investigation the dog is the only animal that can provide the answers we need. This is even more true at present than it was in the past. The relatively simple problems involved in the control of diphtheria for example could be solved by studies on guinea pigs and rabbits. The elder of our readers will recall the thrilling story of the speeding of antitoxin by dog-sled to a child critically ill at Nome. Men and dogs in Alaska, and guinea pigs in the laboratories where the secrets of diphtheria were unveiled, all shared in this triumph.

Today, however, when the plagues and pestilences of the past are coming under control, the issues of human life and health depend much more upon a knowledge of physiology than of bacteriology. Here, the smaller animals—more remote in their structure from man—will not serve. The studies on nutrition which gave us victory over pellagra, the discovery of insulin which has removed the worst terrors of diabetes, the brilliant conquest of anemia by the use of liver extract—all these were made possible by experiments on dogs. Our understanding of the working of the central nervous system and the control of shock during the war and in the hospital today rests on work with dogs. So do many procedures in modern surgery. So does the testing of new and promising drugs. The clock of medical progress would be stopped by any such restriction as that proposed in New York.

As both a dog lover and a parent, I would choose my child's life or my wife's rather than my dog's. So perhaps would the dog, if he understood the emergency; for there are plenty of instances in which these devoted animals have risked and sacrificed their lives for their human friends.

This editorial was originally headed "Dogs or Babies," but such a title involves a false distinction. The canine race profits as much as the human race from the blessings of biological science. Pasteur, through his work on anthrax and rabies, was probably the greatest benefactor of domestic animals who ever lived. Millions of dogs have been saved from suffering and death because hundreds of dogs were employed in experiments on rabies and distemper. The value to dogs of experimentation with penicillin holds great promise for the future.

So both dogs and babies have a stake in this issue. Caninitarians as well as humanitarians should unite to counter a sinister attack on the pursuit of sciences which are vital to the welfare of both dogs and men. It is our hope that public health workers as well as doctors and nurses will organize to meet the challenge which has been presented in New York State.

FIELD TRAINING FOR PUBLIC HEALTH PERSONNEL

AN opportunity for studying the actual practice of functioning health organizations is an essential part of any sound academic training of public health personnel. It corresponds to the ward rounds in the last two years of the medical course; and like those ward rounds, it involves no mere observation but a critical analysis of a series of concrete problems.

In addition to this type of training, which is a normal part of the work for the M.P.H. degree, many educators and, perhaps, most administrators, believe that the prospective public health worker should have an additional period of 3 to 12 months spent as a worker-in-training in an organized health service. This is a requirement parallel with the year of hospital interneship. Such field training may be received before the student takes up his formal academic work, or after that work is completed, or both. The New York State Department of Health has provided excellent facilities for preliminary in-service training, and believes that the question of whether a candidate is worth academic instruction can best be determined in advance.

A period of post-academic training of at least three months' duration is required for students in all schools of public health nursing and in several schools of public health. All the students of health education financed in recent years through the U. S. Public Health Service have been required to take such field training; and in several schools they must complete field training satisfactorily before receiving their degree. Such a requirement seems by no means unreasonable. It is based on the same assumption as that which requires a thesis from a candidate for a research degree—the assumption that the student must prove his competence not merely by passing an examination, but by demonstrating that he can actually apply his knowledge to a concrete problem.

Growing interest in such field training naturally raises the question where—and how—such training may be provided. Clearly it can only be in health services of high quality; but, in addition to such quality, it will require very special facilities in the way of supervision. Our best precedents come from experience in public health nursing and from the work of the Michigan Field Training Center operated by the State Health Department and seven local departments jointly with the W. K. Kellogg Foundation. Dr. Horning and Miss Tuttle describe this pioneer enterprise in articles carried in this issue of the JOURNAL.

It seems possible that our Committee on Professional Education may soon find it desirable to prepare standards for the accreditation of field training areas for extensive experience. The development of such areas will require a supervisory staff qualified for their direction; and it would seem reasonable to ask the U.S.P.H.S. to finance such staffs, since the benefits to be derived from their services will be more than state-wide.

SEVENTY-FOURTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
CLEVELAND, OHIO — NOVEMBER 11

Credit Lines

NEWS ON THE POLIO FRONT

Two reports recently published by The National Foundation for Infantile Paralysis repay study. The Foundation's annual report for the year ended May 31, 1945, analyzes fully the interrelated activities, chief among which are programs of research and education. Of the total of nearly 3 million dollars expended during the year, more than $400,000, or about one-seventh, was for research; less than $300,000, or 10 per cent for education; and over 2 million, three-quarters of the total, for epidemics and public health appropriations, the Georgia Warm Springs Foundation, and Tuskegee Institute.

This represents perhaps the first time in history that a voluntary health agency dependent upon public subscription has found it possible to allocate such large sums to basic research. Of the total expenditures for research, over $200,000 was for virus research in 8 universities or medical schools and one state health department, and nearly $200,000 for research for the prevention and treatment of aftereffects in 8 universities and medical schools, one hospital, and the U. S. Public Health Service.

A significant aspect of the research and educational work of the Foundation is that it does not set up its own laboratories and institutions and thus preserves the advantages of many minds in many settings.

The second of the Foundation's reports deserving a careful study is *Facts and Figures about Infantile Paralysis*. This is a historical and statistical study. Infantile paralysis was first reported in the medical literature of the United States by Caverly, who reported its occurrence in the Otter Creek Valley of Vermont in 1894. The first major epidemic centered around the eastern seaboard states in 1916.

The statistical data include maps showing the distribution of polio cases in the United States for each year 1933–1944, tables showing cases and deaths for each year 1915–1943 and a variety of other tables and charts. A pictograph chart based on the 1941 Maryland epidemic shows 50 per cent of 290 cases with no aftereffects, 29 per cent with slight aftereffects and 18 per cent, nearly one in five, with marked aftereffects, and 3 per cent of fatalities. This report and the interpretive comments of the Medical Director, Dr. Don W. Gudakunst should have a wide distribution among physicians, students, and health workers.

OFFICIAL STATE ACTION ON PROBLEMS OF ALCOHOLISM

Historically the alcoholic has seldom been regarded as a public health responsibility, or indeed a public responsibility. However, there has recently been considerable activity both in official and unofficial agencies. Among the most important developments are those in official state bodies. The *Journal* is indebted to the Research Council on Problems of Alcohol for copies of its *Bulletins* from which was abstracted the following information on current state activities with respect to the problems of alcoholism.

The recent legislative sessions of several states have established Commissions or Boards for the care of inebriates.

1. The *Connecticut* Legislature of 1945 enacted "sound legislation for the study, care and treatment of alcoholics and to provide for the creation of a board which is authorized to make a study of the problem of alcoholism to make its findings public, to set up diagnostic and rehabilitation centers and to con-

duct outpatient clinics." The Act creating the Board provides for financing its work from 9 per cent of all funds received by the State Liquor Control Commission, which it is estimated will make from $200,000 to $225,000 available annually. The Board is authorized to study the problems of alcoholism, including methods and facilities available for the treatment, custodial or otherwise, and rehabilitation of alcoholics, and to provide for institutional care where necessary. The Chairman of the Board is Professor Seldon Bacon of Yale's School of Alcohol Studies, and two of its five members are physicians—Dr. Thomas P. Murdock, former President of the Connecticut State Medical Society, and Dr. Arthur H. Jackson.

The law setting up the Board of Trustees for Inebriates provides for commitment to the custody of the Board any habitual drunkard who has been three times convicted of intoxication, or who has lost the power of self-control from the intemperate use of intoxicating liquors. It further provides that any person who requests such assistance must be accepted for treatment by the facilities of the Board.

2. The *Alabama* Legislature of 1945 created a "Commission on Education with respect to Alcoholism," with power "to prepare and administer a program for the rehabilitation of alcoholics and the education of the public with respect to dealing with alcoholism as a disease." An annual appropriation of $5,000 is made available. The seven-member Commission includes Dr. B. F. Austin, the State Health Officer; four other members serve ex officio as heads of other state departments. Two members are citizens without other official capacity.

3. The 1945 *New Jersey* Legislature created the New Jersey Commission for the Rehabilitation of Alcoholics and Promotion of Temperance, making $25,000 available for the first year. The four-man Commission is made up of heads of state departments related to the problem—Dr. J. Lynn Mahaffey, State Commissioner of Health, Commissioners of Institutions and Agencies, of Education, and of the Alcoholic Beverage Control Board. The program includes a survey of current available facilities, establishment of an information and referral center, establishment of one or more clinics, and a working arrangement with courts so that cases of alcoholism would be turned over to the Commission's authority rather than be sentenced to jail.

4. In 1945, the Legislature of *New Hampshire*, by resolution, created a seven-man Commission to study alcoholism and related problems, its expenses to be charged against the revenues of the state Liquor Commission. The new Commission is directed to gather data on the physiological, economic, and social effects of the use of alcoholic beverages, study methods of treatment and rehabilitation of alcoholics, as well as methods of preventive public education. The Commission, whose members serve without pay, is to file its finding and recommendations with the 1947 legislature.

5. The *Massachusetts* Legislature of 1943 created a special Commission to investigate the Problem of Drunkenness in Massachusetts, with special reference to determining whether medical rather than penal treatment should be recommended for alcoholics. In 1945 its 381 page report was submitted to the Legislature with recommendations. Two of these have been favorably reported on by the Committee on Public Health—one for the establishment of a state hospital for the treatment of alcoholics and one for a permanent commission to study the problem of drunkenness. However, no action has yet been taken by the State Legislature on these recommendations.

6. The *Delaware* State Post-War Planning Program includes construction of a new building for alcoholics without psychoses. This plan was presented to the State Legislature in 1943 by the Council of Presidents of all Boards of State Agencies and the Council of Executives of all State Agencies.

7. The *Illinois* Department of Public Welfare organized a "Committee on the Problem of Alcoholism" early in 1944. One building of the Chicago State Hospital has been set aside exclusively for the treatment of inebriates. This program is being carried on in coöperation with Alcoholics Anonymous.

8. A subcommittee to make a study of the entire problem of alcoholism in *Virginia* in 1944 recommended the creation of a farm and plant for the treatment of inebriates, requiring a capital outlay of $1,000,000 and annual operating expenses of approximately $300,000. Although the proposal had the endorsement of both the Governor and the State Hospital Board, no action was taken by the 1944 Legislature. Active efforts to pass the proposed measure are in progress in the 1946 legislature now in session.

State Liquor Control Commissions have also been active. The 1943 Oregon Legislature directed its Liquor Control Commission to carry on an educational program in the public schools and among the general public on the harmful effects of over-indulgence in

alcohol. It has published a pamphlet on the dangers of excessive drinking, with the arresting title "Who—Me?"

The New Hampshire Commission investigates all cancellations of drivers' licenses, for driving while drunk, for information as to where they obtained liquor and in what condition they left the inn where served; and other information to serve as a basis for citing tavern keepers for violations. The latter are thus impressed with their responsibility for preventing drunken driving.

As Dr. Paul B. Brooks said in his column of December 24, 1945, before retiring from the *New York State Health News:* "Yes, sir. Things are stirring in the alcohol line and it ain't just cocktail shakers. Folks are coming to recognize that it's a health and not a moral problem. And it's like world peace: When the interested parties can agree on the general principles of a program—they can't expect perfection but there's hope of getting somewhere."

RHEUMATIC FEVER—ARE WE DOING ENOUGH?

In "Facts about Rheumatic Fever," written in simple, lay language, the Children's Bureau tells all of us, particularly parents, what we need to know about rheumatic fever, what is being done through state programs for the care of child sufferers from the disease, and what is still left undone. Rheumatic fever is serious because it kills more school age children in the United States than any other disease. For every child who dies there are many more who have long drawn-out attacks lasting many months. There are simple facts about the prevention and care of rheumatic fever and a statement of the state programs authorized by the Social Security program, provided local and state agencies initiate such programs and seek federal aid. The program has included care of children with rheumatic fever only since 1939. By May, 1945, 18 states had approved programs —diagnostic services, medical care, convalescent and rehabilitation services. Even these reach the children of less than 10 per cent of the 3,070 counties in the United States.

STATE HEALTH DEPARTMENTS' CONCERN WITH SCHOOL HEALTH

The concern of state health departments with school health programs is highlighted by the fact that two state health departments — Arkansas and Oklahoma — have each given over two recent bulletins to the discussion of school health problems. The September issue of the Arkansas *Bulletin* summarizes the Summer Workshop on School and Community Health Education held at Arkansas State Teachers College and attended by 71 teachers from 50 counties. The subject matter was provided by the State Department of Health and the educational techniques and procedure by the Department of Education. Scholarships were made available by the Children's Bureau. The November issue of the same bulletin summarizes the report of Dr. George M. Wheatley, "Present Status of School Health Service," given at the 1945 Conference of State and Territorial Health Authorities.

The October *Oklahoma Health Bulletin* is devoted entirely to school health subjects, a general discussion by the State Health Commissioner, Dr. G. F. Mathews, and one by Governor Kerr on the importance of adequate school sanitation. Other articles discuss the function of the public health nurse, and dental care of the school child. The November issue continues the subject with a discussion of the teacher's responsibility and a description of a school health program in a two room rural school in Seminole County.

From California also comes word of activity in the school health field. Dr.

George M. Wheatley, Secretary of the School Health Section, has sent Credit Lines editors a copy of Recommendations Relative to the Administration of the Health Program and to Requirements in Health Education for the General Secondary Credential in Teacher Training Institutions. These recommendations grew out of a coöperative community health education workshop held at Huntington Lake last summer. The State Departments of Public Health and of Education jointly sponsored the work, funds having been made available by the W. K. Kellogg Foundation. Also at hand is the September 15–30 issue of *California's Health* of the State Health Department, which, "in response to requests from local health departments" gives "suggestions concerning an educational program to precede and accompany school immunization and tuberculosis case finding programs."

ANNUAL REPORTS

Homer Folks, Secretary of the State Charities Aid Association of New York, takes the occasion of the 1944 annual report of his organization to summarize some of the health and welfare needs that have been crystallized by the war. They are:

1. The vast extent of mental and nervous difficulties about which useful things may be done. The fact that nearly one-third of rejections by Army induction boards were for mental and nervous factors indicates conditions about which we can no longer tolerate relative inaction.

2. Public health looms larger and larger as one of the greatest opportunities which any country, governed by an enlightened public opinion, must embrace.

3. Purchase of health and welfare of school children is a prime investment, as shown by the poor condition of so many of the 18-year olds.

4. Medical care, however excellent its quality in many areas, has obviously not been availed of soon enough and seriously enough by a considerable proportion of the American people. They cannot afford to fail to take steps to change such conditions.

The report of the National Tuberculosis Association for the year ending March 31, 1945, celebrates the creation of a Division of Tuberculosis Control in the U. S. Public Health Service as the natural culmination of the Association's many years of activity. It also announces a news letter, "Que Hay de Nuevo." Issued three times during the year, it reports new developments in tuberculosis control among Spanish speaking people. Financial aid was also given for reëstablishing the work of the Philippine Islands Anti-tuberculosis Society, interrupted by the war. Field service was provided for the St. John's Rotary Club in organizing the Newfoundland Tuberculosis Association which conducted the 1944 Seal Sale for the province.

The association expended over half a million dollars during the year and ended with a surplus of approximately a quarter of a million. It expended $25,000 for social research and $65,000 for medical research. For special work in tuberculosis among Negroes $20,000 was spent, and about $3,500 for work among Spanish speaking people; $10,000 was given to the International Union Against Tuberculosis.

Many Paths . . . One Purpose—The 1944–1945 report of the Milwaukee County Council of social agencies is notable for typography, illustrations and format, and shows what can be done by an imaginative use of present-day processes that are cheaper than printing. Its title too, is descriptive. "We stand," says the report, "in the front line of service to man's unchanging, human needs in a world of crashing change."

MEDICAL SUPPLY HOUSE PAMPHLETS

Pamphlets of several of the drug and medical supply and other concerns have been accumulating on the Credit Lines desk. It seems fitting to mention some

of their contents in recent months. The following are nominated for honorable mention:

What's New, of the Abbott Laboratories for its series of War Paintings.* The October and November, 1945, issues respectively are numbers 8 and 9 in the series, the China-Burma-India Theater with paintings by Howard Baer, and the Southwest Pacific, by Robert Benney. These paintings are also being shown at various exhibitions throughout the country. If anyone is still unable to visualize the horrors of war, let him see these paintings.

Therapeutic Notes, of Parke, Davis & Co. For its general excellence of workmanship and color illustrations. The cover of its October, 1945, issue symbolizes Roentgen's discovery of the X-ray on November 8, 1895.

The Prevention of Communicable Diseases in Childhood, of Lederle Laboratories, with sprightly pastel color illustrations and graphs tells briefly and simply the story of immunization in diphtheria, scarlet fever, measles, smallpox, tetanus, whooping cough, typhoid.

Scope, of The Upjohn Co. for its Basic Science Review Service Series, No. 12 of which describes The Anatomy of the Adrenal Glands, illustrated with beautifully executed drawings in color. The same issue has an article on Oral Penicillin.

Roche Review, of Hoffman-La Roche, Inc. and Roche Organon, Inc. The September and October, 1945, issues summarized in tabular form the literature on the use of vitamins and drugs, including photographs of the crystalline forms of various vitamins.

All of these have excellent paper, format, typography, and color photography.

* This series has now been published in one volume, *Men Without Guns*, by DeWitt Mackenzie. 155 pp. 177 illus. Obtainable from The Book Service. Price, $5.00.

DENTAL HEALTH IN INDIANA

The October issue of Indiana State Board of Health *Monthly Bulletin* is its first "dental issue" and is devoted entirely to the problem of dental public health. Included among more general articles is one on diet control of dental caries, a geographic fluoride survey of Indiana ground water supplies, an analysis of the distribution of dental students and dental care, and a story of dental programs carried on by Indiana industries. It ends with an Edgar Guestian "pome" called "Farewell, My Sweets!" by Dr. Thurman B. Rice.

ORCHIDS TO BALTIMORE

Credit Lines recognizes the outstanding success of *Baltimore Health News*, the monthly publication of the Baltimore City Health Department, Huntington Williams, M.D., Dr.P.H., Commissioner, for personalizing the staff and the program of the Department of Health. The December, 1945, number, for example, reprints photographically an editorial from a local paper on the retirement of the Director of School Hygiene in Baltimore, notes the completion of 40 years of continuous school health work of another staff member, gives credit to the alertness of the chief dietitian in one of Baltimore's hospitals in averting an outbreak of food poisoning, pictures a laboratory staff member now with the Medical Corps of the Navy, and gives an illustrated sketch of the career of a young woman now directing medical research at the Communicable Disease Hospital in Baltimore.

The people of Baltimore will not fail to be more appreciative of the individuals who serve them through the City Health Department and their specialized activities because of this well directed and executed policy of *Baltimore Health News*.

RACE PRACTICES OF NATIONAL ASSOCIATIONS

The American Civil Liberties Union has recently completed a survey of race practices in some 150 semi-public national associations, not of a religious or fraternal character. The survey was made by questionnaire regarding which the report says "It is clear that precise listing is impossible without knowing

more detail than a simple questionnaire affords, and without examining through additional evidence whether professions of non-discrimination actually so work out in practice." Also the questions were devoted largely to discrimination against Negroes, with only one general question as to other minorities (aliens, citizens of oriental ancestry).

With these qualifications 93, two-thirds of 141 associations, reported no racial segregation or discrimination, 40 reported segregation only in local or state chapters, 3 reported discrimination but not segregation, 3 reported complete segregation and 2 exclude Negroes altogether.

The American Public Health Association is among those of a list of 9 health and medical associations that have no policy of racial discrimination in admission to membership. Among others are the American Heart Association, American Hospital Association, American Medical Women's Association, and the American Psychiatric Association.

TOWARD THE CONSOLIDATION OF LOCAL GOVERNMENTAL UNITS

Taxation, of the Minnesota Taxpayer's Association for August, 1945, reports an interesting study in Blue Earth County, Minnesota. This is one of three rural county studies sponsored by the Spelman Foundation and requested by the U. S. Bureau of the Budget. The Director of the Budget wanted to find out whether federal sums to local communities for various purposes, among them local health service, were weakening or destroying local government.

The study was carried on by a local council without direction or supervision from Washington, the State Capitol, or any other source. It found in this county of fewer than 37,000 persons, 298 agencies of government with nearly 700 officers and employees. Among them were 155 separate tax-levying units of government.

The report recommends that, save where there are widely overlapping and conflicting services, these local governmental units should be maintained and strengthened. To revitalize them, however, and encourage them wherever possible to take over some of the responsibilities now exercised by the state and local officials, the Blue Earth Council suggests a plan for the formation of an intergovernmental council in each county to serve in the first instance as a clearing house and a coordinating body. An Act of the 1943 Minnesota Legislature makes this possible by giving any groups of local governing units the right to join together to do what any one of them is empowered to do independently. Thus a great step forward has been taken, for example, in developing the climate in which the 2,700 units of local health jurisdiction in Minnesota can be consolidated into far fewer and more effective working units.

The other two counties being studied are Henry County, Indiana, and Cloquett County, Georgia. It will be interesting to see whether they too recommend strengthening of local government through intergovernmental coöperation, rather than an extension of state or federal control in local services.

WORTH ACQUIRING

And Now, Home—A series of unit programs on the reintegration of the returned soldier to community life, this pamphlet has been prepared for the use of army convalescent services, information and educational officers and organizations interested in acquiring greater knowledge of the medical, personal, social, vocational, economic, and educational problems of army air force veterans and in methods of helping the veteran to meet these problems. Basic

principles found effective both in the armed force and in existing community programs are presented, rather than "rules" since both veterans and communities are individual. Available from the Convalescent Services Division, Office of the Air Surgeon, Headquarters, Army Air Forces, Washington 25, D. C.

The Soldier Takes a Wife—Humorously illustrated and colloquially written, particularly for service men and returning veterans, this little pamphlet charts the "minefields" of a hasty marriage as well as the "clover patch" of a planned one, including proper planning for children. "When you know you've found companionship—its time to think of marriage—not any sooner," "she may be good at jive but a sad sack at the skillet," and "the health of a family can be guarded and promoted if each child is consciously planned rather than just born," are among its admonitions.

This pamphlet was prepared at the request of service medical officers and chaplains and has already been translated into Braille for the benefit of Navy blinded. It is available from Planned Parenthood Federation of America, Inc., 501 Madison Avenue, New York 22, N. Y.

Ten Years of Service for Children under the Social Security Program, August, 1935–August, 1945—This is a summary of the work done in extending health services for mothers and children through Social Security. In three parts it covers maternal and child health, services for crippled children, and child welfare services, all of which are administered by state and local agencies, with federal financial assistance, under plans approved by the Children's Bureau. During approximately the period of the program the infant mortality rate has decreased nearly one-third, the maternal mortality rate more than one-half. Although 100,000 crippled children received care under the program, it is estimated that fewer than 10 per cent of the nation's physically handicapped children have been brought under care. As to child welfare services, only a beginning has been made in providing child welfare workers to cover every state. Available without charge from the Children's Bureau, U. S. Department of Labor, Washington, D. C.

A revision of the leaflet, *Posture,* Guide for Public Health Nurses No. 5, of the Family Health Series, published by the Department of Educational Nursing, Community Service Society, New York City, has just appeared and is well worth acquiring. Its simplicity makes it useful to parents, teachers, high school and college students, as well as doctors and nurses. It is especially planned for teachers. The price of *Posture* is 10 cents plus postage for orders of 1 to 100, 8 cents plus postage for orders of over 100. Address Community Service Society, 105 East 22nd Street, New York 10, N. Y.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.

Health Practice Indices, 1943–1944—*Prepared by the Subcommittee on State and Local Health Administrators of the Committee on Administrative Practice of the American Public Health Association. (3rd ed.) New York: A.P.H.A.,* 1945. 87 pp. Free from publisher.

This is the third edition of a booklet containing a collection of charts which show the range of accomplishments in various fields of community health services for 243 communities in 32 states and 4 Provinces of Canada, as determined from *Evaluation Schedules* submitted by these health departments in 1943 and 1944.

The third edition of this publication represents a marked improvement over the first two editions. The numbering of the lines in the charts, in conjunction with a reference table which was introduced for the first time in this edition, enables one to determine readily the standing of his health department in relation to other departments submitting schedules. The marginal notes which accompany each chart are informative and succinct.

This booklet will prove of interest to all public health workers, since it presents an opportunity to study the performance of a number of health departments from a wide geographic area. The publication will prove of special interest to local health officers, who will find these charts, in conjunction with the *Evaluation Schedule,* to be helpful as a guide to good public health practice. In like manner, directors of the divisions of local health services and directors of divisions of specialized services in state health departments will find these charts to be useful as a basis for consultation services.

As local health departments in increasing numbers submit *Evaluation Schedules,* the charts will become increasingly meaningful.

RICHARD F. BOYD

Paths to Better Schools. *Twenty-third Yearbook of the American Association of School Administrators. Washington: National Education Association,* 1945, 415 pp. Price, $2.00.

The improvement of professional efforts, always desired by the leaders in any field, is achieved by careful study and redefinition of goals, by intelligent utilization of new methods, and by the adaptation of procedures to changing social and economic conditions. *Paths to Better Schools,* prepared by an outstanding group of educators composing the 1945 Year Book Commission of the American Association of School Administrators, presents constructive suggestions for improving school programs, facilitating pupil learning, and modernizing the financing of public education. As stated in its foreword, "Paths to Better Schools . . . sets no final lists of goals, no infallible collection of procedures, no guarantee of success. Much of the content will not be new to those who have made the greatest strides in educational development. It should help many laymen and educators, however, to see more clearly 'what was already there, perhaps, but dim.'"

Despite the commission's modesty, as revealed in the foregoing statement, all who are interested and concerned with public education in the United States, and that should include every adult, will find *Paths to Better Schools* interesting reading and will find the viewpoints and suggestions stimulating and provocative.

Three chapters relate to school programs, one each to Physical Fitness, Preparing Youth for Occupational Efficiency, and Citizenship. The chapter on Physical Fitness, of particular interest to those concerned with health and health education, points out some of the weaknesses of programs of health service, health education, and physical education, and suggests ways by which better programs may be attained. Two particularly significant statements are: "The foundation of physical fitness is laid down in the formative period of the child's life. This means maximum protection from disease and handicaps, a joyous childhood, wholesome health habits, and a vigorous out-of-door play life." and "The great weakness in the school health service has been the failure to develop methods of preventing and correcting defects which are reported in the same frequency year after year."

For those engaged in health education, the chapter on "Better Ways of Learning" provides an excellent summary of present-day viewpoints on teaching methods. Attention is given to "(a) finding and meeting the needs of the individual, (b) democratic tendency, (c) learning by doing, (d) evaluation, (e) increased use of audio-visual aids, (f) teaching related to life situations, and (g) broader objectives through experimental teaching."

Although the parts of *Paths to Better Schools* to which reference has just been made contain information and viewpoints of special interest to those concerned with school health programs, other sections, dealing with methods of financing school programs and of equalizing educational opportunities, should be read by all who wish to develop intelligent opinions regarding federal aid to education and the interrelationship of federal, state, and local education authorities.

CHARLES C. WILSON

Rorschach's Test, II. A Variety of Personality Pictures—*By Samuel J. Beck, Ph.D. New York: Grune & Stratton*, 1945. 402 pp. Price, $5.00.

In this companion volume to *Rorschach's Test I, Basic Processes* (reviewed, *A.J.P.H.*, September, 1944, p. 995), Dr. Beck has carried his exposition of the test into the realm of interpretation. Part I of the present volume is concerned with an explanation of the psychological significance of the various categories, or test factors, into which the responses of a subject to the Rorschach ink blots are classified. In Part II, analyses of the records of a group of persons representative of various intellectual and developmental levels, and a group of schizophrenic and neurotic subjects are presented.

Impressive as are the personality portraits which the author gives, even more impressive are the clinical insights which have revealed the significance underlying test responses. The discovery, for example, that a "good" form response shows an individual's ability "to direct his thinking from his higher centers, i.e., with conscious attention and discriminating judgment," the penetration into the meaning of movement responses, of color responses, and the like, are remarkable achievements. Although the necessity for constant revaluation and validation of the interpretations cannot be too strongly urged, the unique contribution of the test to clinical diagnosis is evident. Despite the book's highly technical nature, lay persons whose interests at

some point touch those of Rorschach clinicians will not fail to find it an absorbing work.

LILLIAN DICK LONG

Virus as Organism—*By Frank MacFarlane Burnet, M.D. Cambridge, Mass.: Harvard University Press,* 1945. 134 pp. Price, $2.00.

". . . as far as the doctor, the public health administrator, and the biological experimenter are concerned, the pragmatic necessity will remain that virus be regarded as organism—self-reproducing, varying, and surviving like any other living being." With this concept the author progresses to a consideration of the behavior and characteristics of viruses in the dynamic, evolutionary and genetic sense. Variation in a virus is considered to be selection of mutating forms, and survival is considered in the broad terms of parasitism. These ideas are carried forward into a discussion of the evolution and changes in virus diseases as a problem in natural history; it is in these sections that the book is most stimulating in seeking to interpret the history of a virus disease in terms of the agent's behavior in the host. For instance, herpes simplex and psittacosis probably represent old diseases in which the virus has reached evolutionary stability with the host; poliomyelitis is presented as a disease in the process of evolution. The discussions of influenza, smallpox and yellow fever seek also to view the broad problems presented by the respective diseases.

The book is provocative, since the author has frankly permitted himself the privilege of indulging freely in theory; for this reason the reader must guard against factual acceptance of all the ideas expressed. It serves, however, an important function in seeking to concentrate attention upon the broad concepts of epidemic disease in terms of the agent involved rather than in minutiae which at present are difficult to interpret. It is highly recommended reading. THOMAS FRANCIS, JR.

Manual for Coding Causes of Illness According to a Diagnosis Code for Tabulating Morbidity Statistics—*Division of Public Health Methods, U.S.P.H.S., Misc. Publication No. 32. Washington: U. S. Govt. Ptg. Office,* 1944. 489 pp.

Here we have in as nearly perfect technical and textual form as possible what all hopeful devotees of systematic morbidity reporting and publication have awaited these many years. Since Bolduan's first public declaration of the need, potential usefulness, and practical methodology of morbidity reporting by medical institutions in 1913, down through the *Standard Classified Nomenclature of Disease,* 1938 and 1942, and the *Hospital Discharge Study of New York* by Neva Deardorff, 1933, *et seq.,* the essential technology for coding according to a diagnosis code for tabulating morbidity statistics has been lacking, and if offered has been neither officially nor unofficially acceptable. We have the distilled essence of the whole matter admirably presented in this volume of 489 pages.

An introduction of 25 pages gives all the necessary textual description for any competent reporting or registration office. The next 25 pages gives us a morbidity code with corresponding numbers of the *International List of Causes of Death.*

From pages 51 to 126, we have a classified listing of morbidity categories with representative inclusions.

Pages 127–461 give us an alphabetical index to the morbidity code.

Pages 462–489 are devoted to three useful appendices.

If there is anything essential missing, the reviewer has not discovered the omission. This is the most important step so far made in our country toward responsible uniform comparable mor-

bidity data. The position of the United States at the next (1948) International Conference on Certified Causes of Death and Diseases will be one of greater distinction and influence because of the appearance of this highly creditable product of effective collaboration between the U.S.P.H.S. and the Bureau of the Census.

HAVEN EMERSON

Government in Public Health—*By Harry S. Mustard. New York: The Commonwealth Fund,* 1945. 219 pp. Price, $1.50.

This monograph is one in the series published for the Committee on Medicine and the Changing Order of the New York Academy of Medicine. Dr. Mustard first analyzes the conditions and problems of public health work in general. Against this background, he surveys the history, current practice, and future opportunities of government health administration on the federal, state, and local levels. The historical approach enables the reader to view the present situation as one of transition between the past and the probable future. Within this framework the study emphasizes the social and political, rather than the technical aspects of the subject.

Dr. Mustard faces squarely the trend toward increasing federal control through the Public Health Service. But the failure to combine all major national administration in the Service, with various unfortunate implications, is also carefully described.

It is recognized that the bulk of actual health service must be rendered by local departments. The fact that many communities still lack full-time health service is viewed as the most immediate need in the entire field. The author believes that mandatory laws should be adopted in the states, requiring that approved districts set up departments employing full-time health officers. The poorer districts will require state or federal assistance, and the growing importance of the state department as an intermediary here between federal and local agencies is fully recognized.

The study is both comprehensive and critical. The reader sees the overall picture, senses progress, but is quite conscious of serious inadequacies and of improvements that are indicated. The style is admirably clear and incisive. One could hardly ask, within brief compass, for a more informative and thought-provoking account of this increasingly important aspect of modern medicine. RICHARD H. SHRYOCK

American Red Cross First Aid Textbook *(rev. ed.)*—*Philadelphia: Blakiston,* 1945. 254 pp. Price, Cloth, $1.00; Paper, $.60.

The revised edition of the well known *First Aid Textbook* of the American Red Cross presents a complete rewriting of previous editions, and has been greatly improved and enriched by contributions from leading surgeons, first aid instructors and research workers. It is profusely and well illustrated. With the rate of home, farm, and highway accidents mounting, and the last-named group a special menace, this textbook is a welcome and necessary tool in the hands of doctors, nurses, and the students in first aid classes. Would we had had it in 1941!

DOROTHY DEMING

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

And We Were Lucky!—Though our combat losses (325,000) in World War II exceed battle deaths in all previous conflicts, including both sides in the Civil War, our European allies suffered far greater casualties, and the enemy endured a still more huge death toll, mounting into the millions.

ANON. American Combat Losses in World War II. Stat. Bull. (Met. Life Ins. Co.). 26, 11:1 (Nov.), 1945.

National Health Bill — Current Model—If you are one of the "socialistic element in the American Public Health Association," you may wish to see that for which you are held, in part, responsible by a spokesman of the opponents of compulsory prepaid medical care. You will find here a clear analysis of the latest version of the Wagner-Murray-Dingle Bill. In the same issue of the Journal is an up-to-date statement of the Medical Association's position in the matter of medical care, and the editorial from which came the words in quotes above.

ANON. The National Health Act of 1945. J.A.M.A. 129, 14:963 (Dec. 1), 1945.

When German Measles Is Decidedly Dangerous—If mothers contract rubella during the first three months of pregnancy, congenital defects frequently develop in the fetus. Commonest lesions are cataracts, cardiac defects, deafness, and microcephaly.

ALBAUGH, C. H. Congenital Anomalies Following Maternal Rubella in Early Weeks of Pregnancy. J.A.M.A. 129, 11:719 (Nov. 10), 1945.

How Times Have Changed Department—"Furthermore, they (the mothers) were instructed to adjust the feeding schedule to the rhythm indicated by each individual baby, rather than to maintain a strictly prearranged regimen. Even when the cause of crying was not evident . . . (they were told to) pick up the baby and try a little fondling. The soothing use of rocking chairs and lullabies was suggested."

ALDRICH, C. A., *et al.* The Crying of Newly Born Babies. J. Pediat. 27, 5:428 (Nov.), 1945.

Health Educator's Functions—You will find here an answer to the objection: "If almost all health work is educational and all health workers should be educators, why do we need a health educator?" Also there is a statement about what is being done to create a supply of these supernumeraries.

DERRYBERRY, M. Health Education in the Public Health Program. Pub. Health Rep. 60, 47:1394 (Nov. 23), 1945.

The Older the Sicker—Though the number of absences for both sexes decreased with advancing ages, the duration increased, resulting in an upward trend with age in days lost. You'll find a lot of useful statistics in this recording of Boston Edison experience.

GAFAFER, W. M., and SITGREAVES, R. The Age Factor in Disabling Morbidity 1940–1944. Pub. Health Rep. 60, 49:1447 (Dec. 7), 1945.

In-Service Training by Participation—The "workshop" epidemic hits health administration—with a happy outcome, apparently. Six committees decide what is to go into this particular venture in staff education.

GARDNER, B. C. Staff Workshop Gets Results. Pub. Health Nurs. 37, 11:573 (Nov.), 1945.

It Helps Erupted Teeth, Too—Not often do we have a really controlled human demonstration. But here, two groups of Japanese were relocated—and forced to stay where put. One group was sent to a place with a fluorine-free water supply. The other to a place with water having 3 p.p.m. of fluorine. The teeth of boys and girls sent to each place were examined and two years later reëxamined. The incidence of new caries developing in the fluorine group was about half that of the control.

KLEIN, H. Dental Caries Experience in Relocated Children Exposed to Water Containing Fluorine. Pub. Health Rep. 60, 49: 1462 (Dec. 7), 1945.

Breast vs. Bottle Again—Is mother's milk really better than cow's milk for babies? This question is answered in an impressive series of papers on vitamin, mineral, and trace element contents of both varieties of milk, metabolic studies of mothers, and growth and skeletal maturation of infants. When the series is complete the findings in favor of the breast will be irrefutable, but the bottle will still win the battle.

MACY, I. G., *et al.* Human Milk Studies (and eight related papers). Am. J. Dis. Child. 70, 3:135 (Sept.), 1945.

Preventive and Curative Nursing—Today nurses occupy more than half the technical positions on health department staffs: there are more than 20,000 of them, with 3,500 vacancies. What about the future? There will be less need for certain kinds of nursing—in the care of communicable diseases—but a great deal more work in mental and chronic diseases. Other changes are in store.

MOUNTIN, J. W. The Future of Public Health Nursing. Pub. Health Nurs. 37, 11: 542 (Nov.), 1945.

ANTU—A new rat poison, which seems to be specific for Norway rats, is now available for use by sanitary officers. Its emetic properties make it safe for dogs (in most cases).

RICHTER, C. P. The Development and Use of Alpha-Naphthyl Thiourea (ANTU) as a Rat Poison. J.A.M.A. 129, 14:927 (Dec. 1), 1945.

Generously Adequate Diets for Children—Children will consume the basic foods in generous amounts if they are given the chance, and they will grow much better than if kept on a diet as deficient in these essentials as most institutional fare is, and a good many home-served meals are. As Bernard Shaw would say, "I could have told them that and saved them the trouble," but someone, I suppose, should demonstrate the probable. At any rate, the children enjoyed a year of good eating.

ROBERTS, L. J., *et al.* Results of Providing a Liberally Adequate Diet to Children in an Institution. J. Pediat. 27, 5:393 (Nov.), 1945.

Hopeful Note—A tardy outbreak of influenza which involved a considerable number of individuals in unvaccinated wards, but did not occur in vaccinated wards, suggests that immunity produced by vaccination may persist at least one year.

SALK, J. E., *et al.* Immunization Against Influenza with Observations During an Epidemic of Influenza A One Year After Vaccination. Am. J. Hyg., 42, 3:307 (Nov.), 1945.

Flight in Pure Speculation—A British M. O. H. takes a broad look at public health and asserts that we are now on the threshold of a third phase. The initial or sanitation era was followed by an epidemiologic attack upon specific diseases coupled with maternity and infant hygiene. Our new aim is

the prevention of deviations from health from whatever cause. As engineering gave way to epidemiology, so the latter will bow to sociology as the "curly haired boy" of public health administration, the essayist implies.

SAVAGE, W. Public Health and Its Debt to Experimental Medical Research. M. Officer. 74, 20:161 (Nov. 17), 1945.

Out on a Crowded Limb—First concerns of men and women who work is a job and security, but an increasing number of labor-management contracts include health insurance, which is a sign, asserts this writer, that labor has some concern about health protection, too. He predicts that labor will continue to support down-to-earth programs against V.D.

SHOSTAC, P. Notes on Industrial Cooperation. J. Social Hyg. 31, 7:481 (Oct.), 1945.

Out of This War—Our Spanish war shocked us into the control of typhoid, the first World War drove us to attempt to stamp out syphilis. The recent conflict challenges us to do as much against mental disease. An aging population, too, will change directions of public health from communicable disease and infant hygiene to chronic conditions.

WINSLOW, C.-E. A. Postwar Trends in Public Health and Nursing. Am. J. Nurs. 45, 12:989 (Dec.), 1945.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed in future issues.

ANATOMY AND PHYSIOLOGY. By Frederic Theodore Jung, M.D., and Elizabeth Carpenter Earle, R.N. 3rd ed. Philadelphia: Davis, 1945. 829 pp. 338 illus. Price, $4.00.

CLEVELAND MARKET DATA HANDBOOK. By Howard Whipple Green. Cleveland: Real Property Inventory of Metropolitan Cleveland, 1945. 69 pp. Price, $2.50.

THE EFFECT OF BOMBING ON HEALTH AND MEDICAL CARE IN GERMANY. By the Morale Division, United States Strategic Bombing Survey. Medical Branch Report. Washington, D. C.: War Department, 1945. 388 pp.

A FUTURE FOR PREVENTIVE MEDICINE. By Edward J. Stieglitz, M.D. New York: Commonwealth Fund, 1945. 77 pp. Price, $1.00.

HOUSE NO. 2000. Report of the Special Commission to Investigate the Problem of Drunkenness in Massachusetts, 1945. 381 pp. Free from Mr. Frederick Cook, State Secretary, State House, Boston, Mass.

HYGIE CONTRE VENUS. Guerre a la Syphilis! By Adrien Plouffe. 2nd ed. Montreal: Les Editions Lumen, 1945. 221 pp.

MANUAL FOR CODING CAUSES OF ILLNESS ACCORDING TO A DIAGNOSIS CODE FOR TABULATING MORBIDITY STATISTICS. By the Division of Public Health Methods, U. S. Public Health Service. Washington, D. C.: Government Printing Office, 1944. Miscellaneous Publication No. 32. 489 pp.

MANUAL OF DIAGNOSIS AND MANAGEMENT OF PERIPHERAL NERVE INJURIES. By Robert A. Groff, M.D., and Sara Jane Houtz, B.S. Philadelphia: Lippincott, 1945. 188 pp. 111 illus. Price, $8.00.

MEN WITHOUT GUNS. By DeWitt Mackenzie. Philadelphia: Blakiston, 1945. 152 pp. 177 illus. Price, $5.00.

THE PLACE OF THE FAMILY IN AMERICAN LIFE. Prepared by the Committee of Consultants on Family Life. New York: Woman's Foundation, 1945. 16 pp.

SCIENCE AND SCIENTISTS IN THE NETHERLANDS INDIES. Edited by Pieter Honig, Ph.D., and Frans Verdoorn, Ph.D. New York: Board for the Netherlands Indies; New York: G. E. Stechert, 1945. 491 pp. Price, $4.00.

A STATEMENT OF THE HEALTH NEEDS OF SCHOOL-AGE CHILDREN AND RECOMMENDATIONS FOR IMPLEMENTATION. Washington, D. C.: U. S. Office of Education, 1945. 22 pp.

STREAM POLLUTION IN TENNESSEE. Report on a Study of Pollution of Streams and Other Surface Waters in the State and Programs of Control. By the Stream Pollution Study Board. Nashville: Stream Pollution Study Board, 1945. 156 pp.

SURGICAL NURSING. By Robert K. Felter, M.D., and Frances West, R.N. 4th ed. Philadelphia: Davis, 1946. 589 pp. 252 illus. Price, $3.50.

ASSOCIATION NEWS

Vocational Counseling and Placement Service—A Progress Report

Active contact with employers, candidates, and those seeking counsel has greatly increased recently in the American Public Health Association Vocational Counseling and Placement Service. Within the last month, before this goes to press, the Vocational Counseling and Placement Service has received and answered approximately 200 letters; office interviews average two to four daily. The Association operates this Service under a coöperative plan and with the assistance of the U. S. Public Health Service.

The Placement Service files list employment opportunities and available personnel in all spheres of public health (public health nurses are referred to special agencies). On December 31, it listed 146 openings offered by 62 employers, as well as 82 candidates for positions. These numbers promise to increase considerably during the month of January, 1946.

The more openings and available candidates are known to this Service, the better the "clearing house" will function. Efforts are being continued to locate openings and applicants through all available channels. Readers of the *Journal* are invited to notify the Association promptly of existing openings, giving all necessary particulars.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Earl B. Miller, M.D., 111 Dean St., Woodstock, Ill., District Health Supt.

John R. Turner, M.D., 815 N. High St., Uvalde, Tex., Director, Southwestern Texas Health Unit

Laboratory Section

Arthur R. Cade, Ph.D., P. O. Box 224, Rutherford, N. J., Bacteriologist, Givaudan-Delawanna, Inc.

Joy B. Cross, Ph.D., University of Tex., Medical Branch, Galveston, Tex., Research Assoc., Dept. of Preventive Medicine and Public Health

Philip Grossman, 1000 East Fern Ave., Garvey, Calif., Research Asst., Univ. of Southern California

Harold Macy, Ph.D., University of Minnesota, University Farm, St. Paul 8, Minn., Prof. of Dairy Bacteriology

Bernice Messerschmidt, City Hall, LaCrosse, Wis., Supervisor, State Coöperative Laboratory, State Board of Health

Robert I. Modica, M.S., 1535 Oakmount Rd., South Euclid 21, Ohio, Bacteriologist and Serologist (recently in Service)

Charles R. Smiley, 503 Doctors Bldg., Nashville 3, Tenn., Asst. Bacteriologist, Physicians Laboratories

Dorothy T. Wilson, 335 Tioga St., Trenton 9, N. J., Chemist, Industrial Research Dept., National Oil Products Co.

Ernest J. Witte, V.M.D., 350 Lafayette St., New York 12, N. Y., Student, Columbia Univ., DeLamar School of Public Health

Vital Statistics Section

Nancy H. Ampel, 138 E. 35th St., Brooklyn 3, N. Y., Junior Statistician, New York City Dept. of Health

LaVina Harrison, 4422 Third Ave., New York 57, N. Y., Medical Records Librarian, Home for Incurables

Pearl Josephson, 49 W. 96th St., New York, N. Y., Statistician, New York City Dept. of Health

Margaret S. Wright, P. O. Box 1222, Honolulu, Hawaii, Administrative Procedures Analyst, Board of Health, Territory of Hawaii

Engineering Section

Burk Chester, Tavares, Fla., Senior Sanitary Officer, Lake County Health Dept.

Lt. Col. Edward S. Hopkins, Sn.C., 4402 Roland Ave., Baltimore, Md., Chief, Sanitary Engineering Section, Third Service Command

Maynard L. May, Box 177, Boca Raton, Fla., Operations Engineer, Sanitary Section, Boca Raton Army Air Field

Perry McK. Teeple, 2321 Belote Place, Jacksonville 7, Fla., Sanitary Engineer, State Board of Health

Industrial Hygiene Section

John J. Lareau, Dept. of Labor, LaPaz, Bolivia, S. A., Safety Engineer, Accident Prevention Section, Bolivian Government

Food and Nutrition Section

Marjorie G. Abel, M.S., 444 E. Pau St., Honolulu 37, Hawaii, Consultant Nutritionist, Board of Health

Rheta B. Hyatt, 925 Main St., Bridgeport, Conn., Director, Community Nutrition Service

Edna Mae McIntosh, M.S., Gerber Products Co., Fremont, Mich., Nutritionist

Maternal and Child Health Section

Grace E. Malone, 332 New St., Newark 4, N. J., Senior Medical Social Worker, Newark Dept. of Health

Leon Sternfeld, M.D., 74 State St., Albany, N. Y., Chief, Bureau of Medical Rehabilitation, State Dept. of Health

Public Health Education Section

Ruth D. Ackland, 3741 Lurline Drive, Honolulu 17, Hawaii, Acting Director of Public Health Education, Territory of Hawaii Dept. of Health

Lucy S. Dade, Vanderbilt Univ., Mary Kirkland Hall, Nashville, Tenn., Asst. Prof. of Nursing Education, School of Nursing

Davida M. Finney, American Mission, Cairo, Egypt, Missionary

Leah C. Furtmuller, 511 W. 235th St., New York 63, N. Y., Secy., Committee on Visiting Housekeeper Services, Welfare Council of New York City

Sgt. Robert A. Gegere, 227 General Hospital, APO 772, Postmaster, New York, N. Y., Venereal Disease Clinic Asst.

Janie Herndon, M.S.P.H., County Health Dept., Spartanburg, S. C., Health Educator

Mary Margaret Jones, M.S., 17 Ford Ave., Oneonta, N. Y., Exec. Secy., Otsego County Tuberculosis and Public Health Assn.

Barbara L. Kahn, M.P.H., City Health Dept., Public Safety Bldg., Seattle 4, Wash., Director of Public Health Education

Aubrey Mallach, M.S., 519 Smithfield St., Pittsburgh, Pa., Secy., Health Division, Federation of Social Agencies

Carmel A. McKay, P. O. Box 1067, Vallejo, Calif., Exec. Secy., Solano County Tuberculosis Assn.

Gladys M. Morrison, 32 Tucker Ave., Liguanea, Jamaica, B.W.I., Health Education Officer, Government of Jamaica

Myron Weaver, M.D., 5233 3rd Ave., S., Minneapolis, Minn., Asst. Prof. of Preventive Medicine and Public Health, Univ. of Minnesota

Sophie P. Williams, M.A., 600 West 168th St., New York, N. Y., Exec. Secy., Washington Heights-Riverside District Health Committee

Robert O. Yoho, M.A., 3630 W. 32nd St., Indianapolis, Ind., Director, Health Education Division, State Board of Health

Public Health Nursing Section

Grace H. Cole, R.N., P. O. Box 158, Sanford, Fla., Public Health Nurse, Seminole County Health Unit

Thelma Foster, 2002 Castleman Drive, Nashville, Tenn., Director, Nursing Activities, Nashville-Davidson County Chapter A.R.C.

Lt. Mary E. O'Connor, 411 W. 116th St., Johnson Hall, New York 27, N. Y., Student, Columbia University, DeLamar Institute of Public Health

Elizabeth R. Vickers, R.N., 131 E. Arch St., Marquette, Mich., Pediatric Consultant, Michigan Crippled Childrens Committee

Gladys J. Wilson, R.N., 9 Pine St., New Haven, Conn., Supervisor, Nursing Bureau, New Haven Dept. of Health

Pauline Yaholnitsky, Peace River Health Unit, Pouce Coupe, B. C., Canada, Supervisor

Epidemiology Section

Thomas G. DiBrizzi, M.D., 88 Garfield, Brooklyn 15, N. Y., Physician

Daniel H. Fillmore, 7237 Summerdale Ave., Chicago 31, Ill., P.A. Sanitarian (R), U.S.P.H.S.; Director, Statistical Section, Chicago Venereal Disease Control Program

Antonio Galvez Gomez, M.D., Escobar 570 (Bajos), Habana, Cuba, Jefe del Negociado de Desinfeccion y Presidente de la Comision de Clausuras de la Jefatura Local de Salubridad de La Habana

Harris W. Hantman, D.V.M., 56 Norwood Av., Brooklyn, N. Y., Veterinarian

Vicente Lago Pereda, M.D., Calle C 309, entre Fuentes y Lanuza, Reparto Almendares,

Marianao, Cuba, Jefe Local de Salubridad de La Habana

Candido de Oliveira e Silva, M.D., Rua Barroso 227 N., Teresina-Pi, Brazil, S. A., Chief of Service of Control of Leprosy, Dept. of Health

Emilio Soudy Castro, M.D., Hospital San Camilo, San Felipe, Chile, S. A., Asst. to Jefatura Sanitaria Provincial of the Province of Aconcagua

William C. Spring, Jr., M.D., 2A Notre Dame St., Glens Falls, N. Y., Apprentice Epidemiologist, State Dept. of Health

School Health Section

Thelma S. Cline, R.N., 811 South Euclid Ave., Oak Park, Ill., Asst. Supervisor, Cook County Public Health Unit

Marjorie McGrath, 207 Kingston Court, LaCrosse, Wis., Director of Student Health, State Teachers College

Nathan E. Rudd, 440 Lenox Rd., Brooklyn 3, N. Y., District Health Education Counselor, Board of Education

Dental Health Section

Stephen P. Mallett, D.M.D., 358 Commonwealth Ave., Boston, Mass., Oral Surgeon, Boston City Hospital

Zachary M. Stadt, D.M.D., 333 E. 17th St., New York 3, N. Y., Dentist

Laurence E. Totten, D.M.D., 600 W. 168th St., New York, N. Y., Student, Columbia University, DeLamar Institute of Public Health

Unaffiliated

Flora B. Chisholm, M.A., 413 W. 148th St., New York, N. Y., Health Secretary, National Health Program

V. Vembu Iyer, 13 Gordhan Niwas, Matunga, Bombay 19, India, Interested citizen

Stephen C. Newitt, 7504 St. Charles Ave., New Orleans, La., Director, Division of Administrative Services, State Dept. of Health

Morris Shiffman, D.V.M., M.P.H., 1416 Walton Ave., New York, N. Y., Quality Control Director, General Ice Cream Corp.

Edgar G. Smeltzer, Jr., M.A., 87 Meadowbrook Rd., Hempstead, N. Y., Field Secy., Nassau County Tuberculosis and Public Health Assn.

DECEASED MEMBERS

Mrs. Ernestine Consigny, San Francisco, Calif., Elected Member 1931, Public Health Nursing Section

William R. Martin, M.D., Charlotte County, Va., Elected Member 1943, Health Officers Section

Horace Newhart, M.D., Minneapolis, Minn., Elected Member 1930, Maternal and Child Health Section

Maurice H. Rees, Ph.D., M.D., Denver, Colo., Elected Member 1938, Public Health Education Section

Sister Zoe Schieswohl, R.N., Carville, La., Elected Member 1937, Public Health Nursing Section

A.P.H.A. membership application blank on page XXI.

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing Officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.

Positions Available

(Supplemental to list in January Journal)

Sanitary Engineer Wanted, City of Dallas, to be associated with public health department. Salary range $171–$270, starting salary depending on experience. Permanent position under civil service with participation in retirement plan. Make application to Civil Service Board, 309 City Hall, Dallas 1, Texas.

Wanted: Bacteriologist with B.S. or B.A. degree and 1 year training in public health bacteriology and serology to work in State Public Health Laboratory. Salary $1,800 to $2,280. Apply State Department of Health, Box 1877, Richmond, Va.

Territorial Department of Health—Juneau, Alaska—wants public health staff nurses. Minimum salary $245 Southeastern, $281.75 Interior. Minimum qualifications necessary: year of public health in school of nursing approved by N.O.P.H.N. and two years' experience, one under qualified supervision, preferably in V.N.A. or rural public health. Vacation one month, 14 days sick leave, 38 hour week. Apply directly to Director, Division of Public Health Nursing, Box 1931, Juneau, Alaska.

Sanitarians wanted: Salary range $265–$300 month. Possibility of advancement to higher classification. Minimum requirements 2 years' college work with courses in the sciences related to public health or approximately equivalent experience in field of environmental sanitation. Three months' course in public health is obligatory. Write Alaska Merit System, Box 201, Juneau, Alaska.

Health Education Consultant wanted: Salary $300–$345 month. Minimum requirements college degree and 1 year graduate work in public health. Experience: 1 year full-time paid employment in any of the fields of public health education. Write Alaska Merit System, Box 201, Juneau, Alaska.

Positions Available in Delaware: 2 County Health Officers, Director Tuberculosis Control, Director Venereal Disease Control, Physical Therapist, Occupational Therapist, Medical Social Worker. Experience and advanced training in public health essential in medical positions. For information write to Dr. Edwin Cameron, State Health Officer, Dover, Del.

Wanted: Medical Director, Municipal Tuberculosis Hospital, bed capacity 115. One with knowledge of surgery preferred. Permanent, full-time. Salary $4,200 with full maintenance. Apply Box 583, Fall River, Mass.

Wanted: Medical officers needed for several openings in California, physicians to direct maternal and child health programs or venereal disease control work, and to assist local health officers. Requires license to practise in California. Salary $4,800 year. Also opening for District Maternal and Child Health Medical Officer with training in pediatrics or obstetrics and public health. License to practise in California required. Salary $4,800 year. Apply to State Department of Public Health, Room 612, Phelan Building, 760 Market Street, San Francisco 2, Calif.

Wanted: Physician trained in tuberculosis to assume permanent control of Tuberculosis Division of Health Department of Eastern city of 185,000. Applicant please state salary expected. Apply **Box H,** A.P.H.A.

Wanted: In City of Hartford, Conn., physician trained in venereal diseases to assume permanent administrative control of Venereal Diseases Division of the Health Department. Applicant please state salary expected. Apply Dept. of Health, Hartford, Conn.

Wanted: Health Educator. Entrance salary $3,240. Top salary $3,780 per annum; **Epidemiologist and Registrar of Vital Statistics,** M.D. with experience in epidemiology, entrance salary $4,500, top salary $5,000, plus, per annum; **Staff Physician** for health districts, qualification M.D., entrance salary $3,158, top salary

$3,879 per annum. Apply Commissioner of Health, City Hall, Cincinnati 2, Ohio.

Wanted: Executive Secretary for Hawaii Territorial Society for Mental Hygiene. New position. Salary $350 month, advancement dependent on growth of Society and its work. Duties to guide, stimulate, and promote development of integrated program for the Society, now 3 years old. Major activities, education, coördination, publicity. Requirements, training and experience in psychiatric social work with demonstrated ability in public relations preferred. Will also consider candidates with training and successful experience in community organization. Selection to be made on basis of unassembled examination, including submission of short thesis on pertinent subject. For particulars write to the Society, clipper mail, attention Miss Vivian Johnson, Mabel Smythe Bldg., Honolulu, T. H.

Physical Therapy Technician for New Hampshire Department of Public Health. Apply to Merit System Council, State House, Concord, N. H.

POSITIONS WANTED

Senior Bacteriologist, 11 years' experience, 4½ years as U. S. Army laboratory officer with experience in dysentery and malaria and practical work in war bacteriology, tropical diseases, etc., seeks position anywhere in the U. S. **L-480**

Bacteriologist, woman, B.S. 1941, 5½ years' laboratory experience, hospital and public health, seeks position in or near New York City. Prefer desk position such as technical literature research, abstracting, etc. Also interested in laboratory work. **L-481**

Statistician and registrar of vital statistics for past four years in large city wishes to make a change. **S-461**

Veterinarian with 3 years' experience in army meat and milk inspection seeks position with city or state health department. Well qualified in animal disease control. **M-461**

Graduate veterinarian, age 30, V.M.D. University of Pennsylvania, seeks position with city or state health department. Over 3 years' experience in army meat and dairy inspection including plant sanitary inspection. Over 6 years' experience in animal diseases and veterinary pathology. **M-462**

Sanitary Engineer, 5½ years' operational experience city sewage plant, nearly 4 years Captain in Sanitary Corps, U. S. Army, seeks position as sanitary engineer in Eastern U. S. **E-488**

Bacteriologist: M.A., Johns Hopkins, seeks position in Medical College or State Public Health Laboratory. Broad experience. **L-482**

EMPLOYMENT AND PLACEMENT SERVICE

The American Public Health Association announces an expansion of the Employment Service which has become a Counseling and Placement Service for public health workers and employers. This project which is primarily for the service of veterans has been made possible through the coöperation of the United States Public Health Service.

Counseling and guidance services for the various public health specialties are available to candidates through well trained staff consultants. Besides this function the Counseling and Placement Service establishes lines of contact between employers and candidates. It thus serves as a clearing house without recommending or sponsoring candidates or positions.

The facilities of the employment page are open to members free of charge.

Advertisement

Opportunities Available

WANTED—(a) Health officer for county having population of 75,000; headquarters in town of 40,000; year of postgraduate study in recognized school of public health or its equivalent required; $4,000–$5,000 including traveling expenses. (b) Consultant in obstetrics and, also, consultant in pediatrics, to join division of maternal and child health; considerable traveling; headquarters in university medical center. (c) Dentist to develop dental program; dental trailer now being furnished; pioneer project in area where no dentist practices; population without dental service about 9,000. (d) Woman physician to succeed director of student health department in young women's college; enrollment approximately 1,300 students; 200 faculty; medical staff comprised of four full-time physicians and consultant psychiatrist; modern infirmary with well equipped x-ray and laboratory department; faculty appointment with full voting privilege. (e) Public health director; duties consist of general supervision of public health program on island of United States dependency; mild climate although vegetation is tropical. (f) Director of student health; men's college; enrollment of 800 students; nine-month year; possibility of continuing during summer months; town of 100,000; East. (g) Director of public health unit and, also, clinician in special field of maternal and child health; salaries depending upon experience and training; Southwest. **PH2-1** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Health education director; state tuberculosis association; young man who meets qualifications of health education workers set by A.P.H.A. required; duties consist of originating materials, developing programs and assisting in promotion of health legislature; $2,800–$3,300; West. (b) Health educator; private, non-profit agency providing medical care and health services to large group of workers; Master's degree in education with major in health education desirable; $3,600 plus travel allowance. **PH2-2** Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Consultant hygienist; student health education; young woman's college; enrollment around 4,000; duties consist of counseling students and discussing literature and information regarding illnesses; university town; Middle West. (b) Public health supervisor to supervise fifteen staff nurses; considerable executive experience required; Pacific Northwest. (c) Student health nurse; duties include serving as public health nurse in the university town; advantageous if candidate has had visiting nurse experience; West. (d) Two senior and two junior public health nurses; city department of health; Pacific Coast. (e) Supervising and staff nurses; department having important expansion program; East. **PH2-3** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

Advertisement

Opportunities Wanted

Public health specialist expecting early discharge after four years with Army; degrees Eastern schools including certificate in public health from Johns Hopkins; ten years' successful administrative experience in public health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist, now director of department, small college, is available for appointment; A.B., M.A., and Ph.D. degrees; seven years' teaching experience limited to Bacteriology and Immunology; recommended as a capable organizer; excellent teacher; for further information covering qualifications including bibliography, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator is available; A.B. degree eastern school; graduate training in public health; in charge department of public health education in municipal health department, eight years; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young physician well qualified as health educator; B.S., M.D. and master of health degrees; several years, director of university health service where he has carried a rather heavy teaching load; recommended as an exceptionally fine teacher, clear thinker about problems of education and student welfare, able to stimulate students to high degree of activity; for further information please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

NEWS FROM THE FIELD

DANGER OF MALARIA EPIDEMIC STEADILY DECREASING

Risk of introduction of an epidemic of malaria by returning soldiers from overseas is continually decreasing, according to a statement by Major General Norman T. Kirk, Surgeon General of the Army.

The situation is reflected in the rate of admissions of malarious cases in hospitals in this country which reached a peak of 6,000 cases in February, 1945, and has been following a declining curve since that time, General Kirk said.

It is expected that the rate will continue to go down because a large proportion of the personnel of divisions heavily seeded with malaria in the early stages of the war already have been returned to this country.

At one time this disease was incapacitating about ten times more American soldiers than Japanese implements of war. The progress of the war in the Pacific in the early stages was seriously impeded until a special malaria control organization was established which helped bring this hazard under control, principally by anti-mosquito measures and atabrine.

During this high incidence of malaria in the Pacific there was concern that epidemics might develop in this country with the return of soldiers who had been infected. Since atabrine is not a cure but only a suppressive in most types of malaria, it was feared that returned soldiers who had stopped taking atabrine would suffer relapses which would lead to the spread of the disease here.

Lt. Colonel O. R. McCoy, Medical Corps, Chief of the Tropical Disease Control Division in the Preventive Medicine Service of the Surgeon General's Office, issued a statement in the fall of 1943 that, with proper precautions, there should be little danger of any serious epidemic of malaria in this country due to returning servicemen. Developments since that time have shown that the incidence of malaria among civilians in this country has not increased.

As men returned from overseas service during the latter part of 1943, the number of admissions to hospitals in the United States began to rise, bringing the total for the year to 5,075. Practically all of these cases represented relapses of malaria infections acquired overseas. In 1944 more than five times as many such cases were recorded, a total of 28,150. In the first six months of 1945 there were 30,420 such admissions. Since February, 1945, the curve has taken an abrupt downward turn that has steadily continued until the number of such cases is approaching the low level of the early part of 1943.

Colonel McCoy explained that in the majority of cases the disease has run its course after a man has suffered a few relapses, and no permanent damage has been done. Experience with the Pacific type of vivax malaria indicates that in 1,000 cases about one-third will have only one relapse. Only about 40 out of a thousand will suffer ten relapses, and only about one in a thousand will have as many as 20 attacks. The relapses are less severe as time goes on.

If a soldier who suffers a relapse of malaria is given proper treatment, the symptoms will be rapidly relieved and progress of the disease will be quickly suppressed, according to Colonel McCoy.

There is no permanent damage and only brief incapacitation results if

prompt and efficient action is taken. Fear of the disease due to lack of information can cause more harm than malaria itself.

The type of malaria of greatest military significance to American troops is vivax or benign tertian malaria, which is rarely a serious disease. About 90 per cent of Army cases are of this type. A man taking the necessary small doses of atabrine who has been infected with malaria can continue his arduous duties without suffering any symptoms. When the infected soldier stops taking atabrine the usual symptoms, chills, fever, headache and nausea, may appear. Atabrine does not always completely cure benign malaria.

Another type—malignant tertian malaria—which has been of concern to American troops can prove fatal if prompt and proper treatment is not given. Since this type can be completely cured by atabrine, it has not been so much of a problem as the benign type.

During a relapse a man may suffer loss of weight and anemia, but this can be corrected in a comparatively short time by rest, proper diet and, in some cases, a tonic. Complete recovery usually takes place before another relapse. The effects are not cumulative in the cases where individuals suffer a large number of relapses.

The yellow color the skin takes on as a result of taking atabrine gives concern to many victims of this disease. This is not due to jaundice or any malfunctioning of the body, but is caused by the yellow color of atabrine which is deposited in the skin. It will disappear a few weeks after the soldier stops taking atabrine.

Malaria has been a disabling disease in this war—it has been by far the major medical problem encountered by the Army overseas, but it has rarely been fatal. In the few cases of death, malaria has usually been associated with other diseases and with circumstances which caused delay or inadequate treatment, according to Army records.

SOUTH AFRICA TO CREATE ITS WAR MEMORIAL IN HEALTH

A dispatch on January 9 from Pretoria, South Africa, carries a statement of the Ministry of Health that South Africa's national war memorial will be a healthy people. According to the statement, a nation-wide health appeal is to be launched, including plans for the establishment of an institute of nutritional research, health education, and scholarships to train a staff, particularly a non-European staff, for the national health service.

GENERAL KELSER APPOINTED DEAN OF VETERINARY MEDICINE AT PENNSYLVANIA

Brigadier General Raymond A. Kelser, who for the last 8 years has been Chief of the Veterinary Division of the Office of the Surgeon General, U. S. Army, Washington, has been appointed Dean of the School of Veterinary Medicine at the University of Pennsylvania at Philadelphia. He is expected to resume his duties shortly. General Kelser is the Chairman of the Standard Methods Committee on Biology of the Laboratory Animal of the Laboratory Section, A.P.H.A.

HARVARD APPOINTS GENERAL SIMMONS AS DEAN

President James B. Conant of Harvard University on January 9 announced the appointment of Brigadier General James S. Simmons, U.S.A., Chief of the Preventive Medicine Service, Office of the Surgeon General, Washington, as Dean of the Harvard School of Public Health, Boston, effective about July 1, 1946. General Simmons, who was born in 1890, received his medical degree at the Uni-

versity of Pennsylvania in 1915, a Ph.D. from George Washington University Medical School in 1934, and the doctorate in public health from the Harvard School of Public Health in 1939. He entered the Army Medical Corps in 1916, served as chief of laboratory services in various U. S. Army hospitals, and commanding officer of departmental laboratories and, from 1924 to 1928 was chief of the bacteriological department of the Army Medical, Dental and Veterinary Schools. He has lectured and written extensively on experimental bacteriology, preventive medicine, and tropical medicine. He has recently received the Distinguished Service Medal for his military work, and in 1943 was awarded the Sedgwick Memorial Medal by the American Public Health Association. He received the Sternberg Medal in 1940. General Simmons is President of the American Academy of Tropical Medicine and of the American Society of Tropical Medicine.

James Stevens Simmons

President Conant also announced the reorganization of the Harvard School of Public Health which will give it co-equal status in the University with the Harvard Medical School and other professional divisions. He announced that the Rockefeller Foundation has granted a million dollars for the expenses of the school for ten years, beginning July 1, 1946, and that the University has set aside an additional sum of $750,000 as an endowment to supplement the present endowment fund. In addition to its present building on Shattuck Street, Boston, the Harvard School of Public Health will occupy the Harvard-owned Collis P. Huntington Memorial Hospital nearby which will be remodeled, giving the school an additional 40,000 square feet of floor space.

CAPTAIN G. W. LARIMORE RECEIVES LEGION OF MERIT

The War Department has announced the award of the Legion of Merit to Capt. Granville W. Larimore, Chief of the Health Education Branch, Medical Intelligence and Health Education Division, Office of the Surgeon General, U. S. Army, for his outstanding educational work.

The award was made by Major General Norman T. Kirk, Surgeon General of the Army, in line with the War Department's policy of giving personal recognition to individuals who help provide what Secretary of War Patterson recently described as the best medical care any army ever received in any war.

DR. PETTY APPOINTED NEBRASKA STATE DIRECTOR OF PUBLIC HEALTH

Governor Dwight Griswold of Nebraska announced in December the appointment of Wallace S. Petty, M.D., of Lincoln, as State Director of Public Health, succeeding C. A. Selby, M.D., resigned.

Dr. Petty received his medical degree in 1908 and has been in public health work since 1925 when he joined the Missouri State Department of Health. He served for ten years with

the Iowa State Health Department, resigning in 1940 to attend the University of Minnesota where he obtained a Master's degree in public health work. Dr. Petty joined the Nebraska State Department of Health in January, 1942, and served for several months as Acting Director. He is a member of the A.P.H.A. Committee on Administrative Practice, representing the Health Officers Section.

AMERICAN MEDICAL ASSOCIATION APPOINTS GENERAL LULL TO STAFF

The appointment of Major General George F. Lull of Scranton, Pa., War Department Deputy Surgeon General, as Assistant Secretary and General Manager of the American Medical Association, Chicago, has been announced. General Lull has retired at his own request after more than thirty-three years in the regular Army. He served as Chief of Personnel for the Army Medical Corps from 1940 to 1943, when he became Deputy Surgeon General and was in charge of recruiting civilian physicians as reserve officers. The appointment was effective with the first of the year.

INDIANA SETS UP DIVISION OF GERIATRICS

L. E. Burney, M.D., State Health Commissioner of Health, Indianapolis, Ind., announces the creation of a new division in the Indiana State Board of Health to be known as the Division of Adult Hygiene and Geriatrics. The last Legislature provided for this new program and set forth the purpose in the following language: "The State Board of Health shall provide facilities and personnel for research, investigation, and dissemination of knowledge to the public concerning the health of persons of middle and advanced age and diseases common thereto, and also concerning dental public health. The State Board of Health is hereby vested with discretion for providing means and methods for research, investigation, and dissemination of knowledge, and may make, adopt, and promulgate rules and regulations for establishing proper facilities and personnel and to carry on the work described in this section."

In creating this new division certain principles and objectives have been formed, and a program designed to accomplish these objectives is now being planned. The objectives, briefly stated, are as follows:

1. To study the factors of life that are related to senescence and senility and the diseases and disabilities associated with advancing years.

2. To plan for the care and well-being of those whose advancing years and experience entitle them to the best protection and support that medical knowledge and adequate care can provide.

3. To inform the public concerning diseases and disabilities of advancing age, and to stimulate the interest of the medical profession in diseases of age.

4. To coöperate with and assist both the lay public and professional groups in a full appreciation of the economic, social and cultural value and usefulness of men and women who by reason of age and experience constitute a most important group of our population.

5. To be interested in laws, rules and regulations, conditions and requirements as may affect the well-being and usefulness of men and women in advancing years, and to seek improvement of such laws, rules and regulations, conditions and requirements as may affect the elderly adversely.

The magnitude of the problem of advancing years, according to Dr. Burney, is indicated by recent United States Census reports. In 1900 approximately 18 per cent of the population of the United States had reached the age of 45 and over. The census of 1940 showed that 27 per cent of the total population were 45 and over. The number of men and women in the State of Indiana who today have at-

tained the age of 60 is in excess of 350,000. The number in this age group in continental United States is estimated above 13 million. Within the last census decade, 1930 to 1940, there was an increase in the number of persons of age 65 and over to 35 per cent, while in contrast the total population increase was but 7.2 per cent in the same period.

The Division of Adult Hygiene and Geriatrics is under the directorship of William F. King, M.D. The work of this division in carrying out its objectives will be watched with much interest, since this is said to be the first official activity by any state in this new field of public health endeavor.

DR. JOHN WHEELER APPOINTED NEW HAMPSHIRE STATE HEALTH OFFICER

John S. Wheeler, M.D., M.P.H., of Concord, N. H., has been appointed State Health Officer to succeed Alfred L. Frechette, M.D., M.P.H., who has resigned to become Health Officer of Brookline, Mass.

Dr. Wheeler, who is a graduate in medicine of Boston University Medical School in 1930, has his degree in public health from Johns Hopkins in 1938 and served for several years as epidemiologist and director of the Division of Local Health Work in New Hampshire, beginning in 1937.

NATIONAL CONFERENCE FOR COOPERATION IN HEALTH EDUCATION MEETS IN NEW YORK

A two day session of the National Conference for Cooperation in Health Education met in New York City December 29 and 30, and was well attended by representatives of various national agencies who came from as far west as California. Ira V. Hiscock, D.Sc., Professor of Public Health at Yale University School of Medicine, New Haven, represented the American Public Health Association.

The following officers were elected:

Chairman, Dr. John L. Bracken, Superintendent, Board of Education, Clayton, Mo., representing American Association of School Administrators

Vice Chairman, Bosse B. Randle, R.N., Mineola, N. Y., representing N.O.P.H.N.

Secretary, Vivian Drenckhan, New York, representing National Tuberculosis Association

Additional members of Executive Committee: W. W. Bauer, M.D., American Medical Association; Mayhew Derryberry, Ph.D., U. S. Public Health Service

CANADIAN PUBLIC HEALTH ASSOCIATION APPOINTS EXECUTIVE DIRECTOR

The Canadian Public Health Association, Toronto, has announced the appointment of J. H. Baillie, M.D., D.P.H., as Executive Director. Dr. Baillie is a graduate in medicine from the University of Toronto in 1938 and holds the Diploma in Public Health from Toronto in 1941. He has had experience in practice and has served in the Royal Canadian Air Force, where his services were recognized by a series of promotions. He recently has been in charge of hygiene and preventive medicine in the Directorate of Medical Services, Ottawa.

MASSACHUSETTS DENTAL SURVEY

The Dental Bureau of the Massachusetts Department of Public Health, in preparation for conducting a research program in the control of dental caries, is making a survey to determine the incidence of caries among children by age groups and to determine the availability of sufficient dentists to cope with the existing problem.

The fluoride content of all public water supplies in the state has already been determined and in only one town, Farnumsville, was as much as 1 part per million of sodium fluoride (1.3 p.p.m.) found. In all other public water supplies the amount of sodium fluoride was near 0.2 p.p.m.

These data will be used as the basis for the proposed study which will investigate the control of dental caries by utilizing fluorides in the following ways: in public water supplies, in prophylactic pastes and mouth washes, in pastilles and lozenges, in pills, and in topical applications.

DR. PERKINS APPOINTED NEW YORK STATE DEPUTY COMMISSIONER

Edward S. Godfrey, Jr., M.D., New York State Commissioner of Health, Albany, has announced the appointment as Deputy Commissioner of Health of James E. Perkins, M.D., Dr.P.H., who has been associated with the department for the past 12 years as epidemiologist, as District State Health Officer, and more recently as Director of the Division of Communicable Diseases. Dr. Perkins is a graduate in medicine of the University of Minnesota and in public health from Johns Hopkins School of Hygiene and Public Health. He is Associate Professor of Public Health and Preventive Medicine at the Albany Medical College, and serves as Associate Editor of the *American Journal of Public Health*, as well as Secretary of the Epidemiology Section, A.P.H.A. He recently was appointed Chairman of the A.P.H.A. Subcommittee for the Evaluation of Methods to Control Air-borne Infection. Dr. Perkins served for several months during 1945 in Italy as a commissioned officer of the U. S. Public Health Service, making a survey of the effect of the war on the Italian civilian population with regard to nutrition and communicable diseases.

DR. SUMNER MILLER OF PEORIA DIES

Dr. Sumner M. Miller of Peoria, Ill., full-time Health Officer of Peoria since 1938, died December 14 at the age of 72, after a long illness.

Since 1906 Dr. Miller had been actively identified with community health services in Peoria. He was President for 17 years of the Peoria Tuberculosis Society and was the founder and first President of the Peoria County Chapter of the American Red Cross. He was a Fellow of the American Public Health Association and a founder and President of the Illinois Public Health Association.

Following a reorganization of the Peoria Health Department in 1938, Dr. Miller left the active practice of medicine and developed the department so that it won recognition in 1943 and 1944 of the cities in its population group in the inter-chamber Health Conservation Honor Roll.

DR. DON W. GUDAKUNST DIES

Don W. Gudakunst, M.D., Dr.P.H., Medical Director of the National Foundation for Infantile Paralysis for the last six years, died January 20 from a heart attack in Chicago at the age of 51. Dr. Gudakunst, who was a native of Ohio, held a medical degree in 1919 from the University of Michigan. Dr. Gudakunst had served since 1924 in various public health capacities, beginning with the School Health Service in Detroit, where he was also Deputy Commissioner of Health and later, in 1938–1939, Michigan State Commissioner of Health. He served for a time before 1940 in the Reserve of the U. S. Public Health Service and since that time has been Medical Director of the National Foundation for Infantile Paralysis, New York, expanding the program of research and medical care. He was a Fellow of the American Public Health Association and Chairman of the Committee on Eligibility at the time of his death.

AMERICAN WATER WORKS ASSOCIATION 1946 CONFERENCE

The American Water Works Association 1946 Conference will be held in St. Louis, Mo., May 6–10.

PERSONALS

Central States

CLAYTON C. BENJAMIN, M.D.,† Manistee, Mich., has resigned as Health Officer of Mason County to accept a similar position for the city of Port Huron, Mich.

ROBERT E. FLOOD, M.D., Northport, Mich., has been appointed Director of the Michigan District Number 7 Health Unit to succeed DR. MADELINE M. DONNELLY, Gladwin.

CHANGES IN HEALTH PERSONNEL IN ILLINOIS:

LESLIE W. KNOTT, M.D., M.P.H.,† on leave of absence from the U. S. Public Health Service, was appointed Medical Administrative Assistant, Illinois Department of Public Health, effective November 15. He has been replaced in the Division of Venereal Disease Control by Dr. CHARLES H. MILLER.

JEAN CHRISTOPHER, M.S.P.H.,* has been appointed Acting Chief of the Division of Public Health Education, Illinois Department of Public Health, effective November 1.

O. K. SAGEN, PH.D.,† has been appointed Chief, Division of Vital Statistics and Records, effective December 1.

MAJOR CLARENCE W. KLASSEN * resumed his duties as Chief of the Division of Sanitary Engineering, Illinois Department of Public Health, effective October 12.

JAMES W. CHAPMAN, M.D., M.P.H.,* succeeded DR. SIDNEY I. FRANKLIN as Health Officer of the DuPage County Health Department, Villa Park, Ill., effective November 1. Dr. Chapman was formerly Health Officer of the McMinn County Health Department, Athens, Tenn.

NEWTON W. LARKUM, M.D.,* after more than 4½ years on active duty in the Army, during which period he served for a while as Chief of the Division of Bacteriology at the Army Medical School and later as Chief of Laboratory Service, 100th General Hospital in England and France, has been released. Before the war he was connected with the Michigan Department of Health. At present Dr. Larkum is Medical Director for the Ames Company of Elkhart, Ind.

PAUL A. LINQUIST, M.D.,† Surgeon (R), USPHS, has been released to inactive status in the service and has been appointed City-County Director of Health for Kansas City and Wyandotte County, Kan.

CHARLES M. MCGILL, M.D., of the U. S. Public Health Service, has been named Chief of the Industrial Hygiene Division of the Ohio State Department of Health.

CHANGES IN HEALTH PERSONNEL IN NORTH DAKOTA:

LT. COL. LLOYD K. CLARK,* after nearly 5 years of army service, returned to his former position as Director of the Division of Sanitary Engineering. He replaces JEROME H. SVORE, Senior Sanitary Engineer in the department, who had been Acting Director.

DR. WILLIAM M. SMITH,* Rome, N. Y., has been named Director of the Division of Preventable Diseases. DR. CAMPANA had been serving as Acting Director of this Division.

ROBERT R. KLING, M.D., Bismarck, was chosen Tuberculosis Consultant in the Division of Preventable Diseases.

CARL A. SCHERER, M.D.,† Duluth, Minn., has been appointed Health Officer of the Sutter-Yuba Bi-County Health Unit, effective September 5. Before going to California, Dr. Scherer was for 10 years Health

* Fellow A.P.H.A.
† Member, A.P.H.A.

Officer of St. Louis County, Minn., and Director of Rural Health Unit 4 of the Minnesota State Board of Health.

C. A. SELBY, M.D.,† resigned as State Health Director in Nebraska, effective January 31, as announced in December by GOVERNOR DWIGHT GRISWOLD. Dr. Selby, who is a resident of North Platte, Neb., has served since November, 1942.

CHARLES F. WAGG, M.D., Executive Secretary of the former Michigan State Hospital Commission, has been named Acting Executive Officer of the new Michigan Department of Mental Health, pending formulation and adoption of a permanent organizational structure. The new department, which was set up by the 1945 legislature, is now attempting to find a satisfactory candidate for the position of Director of Mental Health.

WILLIAM D. WEIS, M.D.,† has been selected by the Board of County Commissioners of Lake County, Ind., for the fourth time to serve a 4 year term as County Health Commissioner.

Eastern States

LT. COL. WALTER M. CULLEY, SN.C.,† for the past 4 years Chief Sanitary Engineer of the Second Service Command and stationed at Governors Island, has become associated with J. LLOYD BARRON * as a Sanitary Engineer for the National Biscuit Company with offices in New York City. Mr. Culley was formerly engineer of the Chester, Pa., Municipal Authority Water Service.

ALFRED L. FRECHETTE, M.D.,† Secretary and State Health Officer of the New Hampshire State Board of Health, Concord, has resigned to become Health Officer of Brookline, Mass. MAJOR JOHN S. WHEELER, formerly Deputy Health Officer in New Hampshire, has been appointed Health Officer as of December 1.

COLONEL WILLIAM A. HARDENBERGH, SN., A.U.S., who has been Director of the Sanitation and Sanitary Engineering Division, Preventive Medicine Service, Office of the Surgeon General, U. S. Army, Washington, has returned to civilian life, resuming his position as Editor of the *Public Works Magazine*, New York City.

HOLLIS S. INGRAHAM, M.D., M.P.H.,* has been appointed provisionally as Director of the New York State Health Department's Division of Communicable Diseases, succeeding JAMES E. PERKINS, M.D.,* Deputy State Health Commissioner. Dr. Ingraham has been associated with the Health Department for 12 years with the exception of the past 3½ years spent in the Navy.

CHANGES IN HEALTH OFFICERS IN NEW YORK STATE:

PAUL B. BROOKS, M.D.,* Deputy State Health Commissioner, has announced has retirement effective December 31. Dr. Brooks was appointed Sanitary Supervisor on March 1, 1915. Later he served as Director of the Division of Communicable Diseases, Assistant to the Director of the Division of Laboratories and Research, and was appointed Deputy State Health Commissioner by DR. NICOLL on July 1, 1923. He has continued to serve in this capacity since that time.

SAMUEL HYMAN, M.D.,* Utica District State Health Officer, resigned October 15 and is now in Chicago.

GEORGE JAMES, M.D.,† ERNEST S. KINSEY, M.D.,† and DONALD C. TULLOCH, M.D.,† were appointed Assistant District Health Officers

* Fellow A.P.H.A.
† Member, A.P.H.A.

effective June 1, 1945, and were assigned to the Middletown, Binghampton and Albany district offices respectively.

KENNETH S. LANDAUER, M.D.,† was appointed Director of the New York State Reconstruction Home effective November 1, 1945.

LOUIS PLATT, M.D.,† Assistant District Health Officer in the Rochester District, resigned effective October 16, 1945.

W. C. SPRING, M.D., Jefferson, O., and C. M. STEWARD, M.D., Norwich, N. Y., were appointed Apprentice Epidemiologists effective November 16 and December 1, respectively.

THOMAS C. STOWELL,† Assistant Director of the Division of Public Health Education is on leave of absence to serve as Director of the Radio Bureau of the Department of Commerce.

MATTIE WASHBURN, R.N., Assistant Director of the Division of Public Health Nursing, has announced her retirement effective December 31. Miss Washburn was first appointed to the position of Supervising Nurse on August 9, 1920. She was appointed Assistant Director of the Division of Public Health Nursing on March 1, 1933.

ROBERT S. WESTPHAL, M.D.,* formerly Assistant Director of the Division of Syphilis Control, was appointed to the position of District State Health Officer and assigned to the Rochester District effective June 4, 1945.

RUTH RIVES, R.N.,† former District Supervising Nurse at Glens Falls, N. Y., has been appointed Assistant Director of the Division of Public Health Nursing, effective January 1.

DAVID R. SALMON has been appointed Executive Director of the National Council on Rehabilitation, New York, N. Y.

COLONEL JAMES A. TOBEY, SN.C.,* returned to his home in Rye, N. Y., on December 24 after 2 years and 8 months overseas. During this period, he participated in 7 combat operations and served with the U. S. military Government in North Africa, Sicily, Italy, England, France, and Germany. For 7 months prior to his return, Colonel Tobey was Deputy Military Governor and Chief of the Department of the Interior in Wurttem-berg-Baden. In this area of over three million German population, he had charge of public health, public welfare, public safety, public works, and administration and local government. He has received three decorations from the French Republic.

G. HAROLD WARNOCK, M.D.,* has returned from military service to his position as epidemiologist with the Nassau County Dept. of Health, Mineola, N. Y.

Southern States

THOMAS MALCOLM BLAKE, M.D., has been named Health Officer of Winston County, Ala., to succeed DR. HUGH C. MCREE,† Hamilton, who resigned September 1. DR. MARVIN S. WHITE, Hamilton, has been named to a similar position in Marion County also to succeed Dr. McRee.

SAMUEL R. DAMON, PH.D.,† who has been Director of Laboratories with the Alabama State Department of Health for several years, and formerly Associate Professor of Bacteriology at Johns Hopkins School of Hygiene and Public Health, Baltimore, has resigned to become on January 1 Director of the Bureau of Laboratories of the Indiana State Board of Health, Indianapolis.

HOWARD W. ENNES, JR.,† Lieut. H(S), USNR, was commended for services

* Fellow A.P.H.A.
† Member, A.P.H.A.

during the war in the Venereal Disease Control Section, Bureau of Medicine and Surgery, Navy Department, by VICE-ADMIRAL Ross T. McINTIRE (MC), USN, Surgeon General of the Navy, by direction of the Secretary of the Navy. Lieut. Ennes is serving as Assistant to the Officer in Charge of the Venereal Disease Control Section.

RICHARD J. PLUNKETT, Major, MC, AUS,† has been appointed Field Consultant for the Division on Health and Sanitation, Institute of Inter-American Affairs. The appointment is part of the Institute's plan to mold wartime coöperative advances in hemisphere health into permanent peacetime channels. Major Plunkett has already started a lengthy inspection and consulting tour which will take him to Bolivia, Chile, Uruguay, Peru, Ecuador, Colombia and the republics of Central America, according to an announcement.

WILLIAM P. SCARLETT, M.D.,† Morrilton, Ark., formerly Health Officer of Wichita, Tex., has been named Health Officer of Little Rock, Ark.

Western States

C. ARTHUR ELDEN, M.D.,† was appointed Obstetric Consultant with the Washington State Department of Health on November 15, and will work in the Maternal and Child Health and Crippled Children's Section. Dr. Elden had previously been Assistant Professor of Obstetrics and Gynecology at the University of Rochester Medical School for 13 years at Rochester, N. Y., and also was in private practice during that time.

HELEN G. SCHWARTZ resigned from her position as Assistant Director in charge of the Western Area, Division of Nurse Education, U. S. Public Health Service, as of January 1. She has gone to Minnesota to take up her new position as Nurse Education Advisor on the Minnesota State Board of Nurse Examiners.

GEORGE M. SHAHAN † has resigned his position as Assistant Executive Secretary and Director of Public Relations with the Los Angeles Tuberculosis and Health Association, Los Angeles, Calif., and has been appointed Executive Secretary of the Washington Tuberculosis Association with headquarters in Seattle.

IRVIN R. VAUGHN, Seattle, Wash.,† who was appointed as Acting State Registrar with the State Department of Health on November 26, will be the Acting Head of the Public Health Statistics Section. Mr. Vaughn was formerly Director of Vital Statistics for the State Board of Health of South Dakota.

Foreign

G. HOWARD GOWEN, M.D. (Lt. Col., MC, AUS),* has returned to the University of Michigan School of Public Health after 31 months overseas in North Africa, Italy, France and Germany where he was Director of Laboratories, Epidemiologist and head of the Preventive Medicine Section of the 7th Army for 12 months.

LT. COL. WILLIAM REINER-DEUTSCH, SN.C.,† lately Executive Officer of 191 General Hospital in Paris, has returned to New York City.

* Fellow A.P.H.A.
† Member, A.P.H.A.